THE physical therapy REVIEW

Volume 35 - Number 2 February 1955

Innervation of Mammalian Muscle — van HARREVELD

Home Care Instructions — OLMSTED

Problems in the Physical Habilitation Program for Cerebral Palsy — LILJANDER

Acetic Acid Ionization
A Study to Determine the Absorptive Effects upon Calcified Tendinitis of the Shoulder — PSAKI and CARROLL

PUBLISHED MONTHLY BY
THE AMERICAN PHYSICAL THERAPY ASSOCIATION

MISS PHOEBE

NO. 1 IN A SERIES

"I told Miss Phoebe she couldn't go for her E & J ride until she ate *all* of her lunch."

E J

E & J's combination of modern good looks, comfort and handling ease helps erase "wheel chair shyness"—encourages a healthy desire for activity. E & J chairs for every handicap, in sizes from "Tiny Tot" to rugged adult are available through surgical supply dealers.

EVEREST & JENNINGS, INC.

1803 Pontius Avenue • Los Angeles 25, California

Electrical Muscle Stimulation

IS . . . an artificial stimulus used to cause a muscular contraction which may promote decongestion and healing.

ADJUNCT THERAPY IN

Strains • Dislocations • Muscular Atrophy • Sprains
Conditions requiring Muscle Re-education

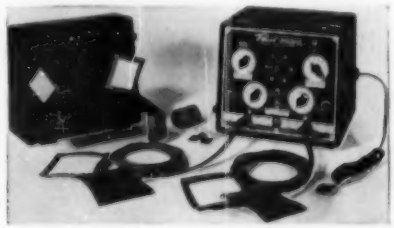
USE PAUST STIMULATOR

NOW ON 30 DAYS FREE TRIAL

Just send in the coupon today for your Paust Electronic Stimulator. Use for 30 days without cost or obligation. If you are not entirely satisfied, return complete express prepaid to us.

PRICE $295

USED IN
OFFICE
CLINIC
HOSPITAL
PATIENT'S HOME



PAUL J. MANDABACH, INC., 6604 Newgard Ave., Chicago, Ill.
Exclusive Paust Distributor

☐ Please send me Paust Electronic Stimulator Model 50-C, Price $295, express, on 30 days free trial offer.

☐ Have your representative come in to see me about _____ (date).

☐ Send me, without cost or obligation, literature on Electrical Muscle Stimulation.

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

PRESTON

A Complete Line

FOR PHYSICAL MEDICINE AND REHABILITATION

REHABILITATION: **Walking Parallel Bars and Exercise Staircases** of various designs; Posture Mirrors, single and triple; **Gymnasium Mats** in various thicknesses and coverings; **Bicycle Exercisers;** Restorator; **Progressive Resistance Exercise Units;** Quadriceps-Gastrocnemius-Footdrop Boots; Dumbbells; Indian Clubs; **Wall Pulleys;** Door Pulley Assemblies; **Guthrie-Smith Suspension Apparatus;** Stall Bars; **Shoulder Wheels** with height adjustment; Manuflex; Kanavel Table; **Sayre's Headslings;** Ankle Exercisers; Treatment Tables; Timers.

HYDROTHERAPY-ELECTROTHERAPY: **Whirlpools** for every use; Hubbard Tanks; **Paraffin Baths; Hydrocollator;** Shortwave Diathermy; Galvanic-faradic-sinusoidal Generators; Ultraviolet Lamps; **Infra-red Lamps and Bakers; Ultrasonic Generators.**

DIAGNOSTIC APPARATUS: Chronaximeters; Dynamometers; Goniometers; Oscillometers; Thermocouples and Skin Thermometers.

INVALID EQUIPMENT: **Everest & Jennings Wheelchairs;** Hollywood Wheelchairs; Commodes; **Walkers;** Patient Lifters; **Standing (Tilt) Tables;** Stretchers; Large selection of **Crutches and Canes.**

COMPLETE LINE OF CEREBRAL PALSY FURNITURE AND EQUIPMENT—SPEECH THERAPY—SELF-HELP DEVICES.

New Items of Interest

Literature Upon Request

Guthrie-Smith Universal Sling Suspension Apparatus, Standard and Portable Models; complete with all springs, ropes, pulleys, slings, etc. **$295.00**

Standing Table, manually operated; movable footrest; tilts up to 70°. Supplied with safety belts. Price including casters.. **$190.00**

Write for Free Copy of Illustrated Catalog No. 1054—Inquiries Invited

ALL your needs supplied by ONE reliable source

J. A. PRESTON CORP.
175 FIFTH AVENUE, NEW YORK 10, N. Y.

REVIEWS BOUND

Back issues of the

Physical Therapy Review

will be bound in a dark red, leather-type binding and lettered in gold (Physical Therapy Review, volume, and year).

12 issues for $5.00

Send your REVIEWS, your check or money order to cover cost of binding, and the address to which the books are to be sent to:

AMERICAN PHYSICAL THERAPY ASSOCIATION
1790 Broadway, New York 19, N. Y.

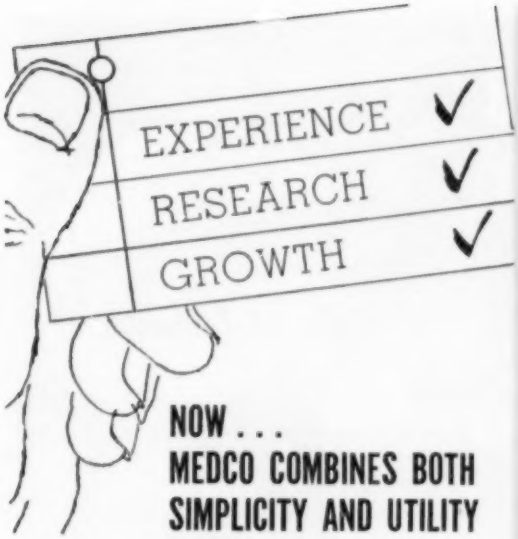
Allow a minimum of two weeks

AMERICAN PHYSICAL THERAPY ASSOCIATION CONFERENCE

June 19 to 24, 1955

N
W ← 1955 → E
S

ST. LOUIS, MISSOURI



NOW . . .
MEDCO COMBINES BOTH SIMPLICITY AND UTILITY IN THE

Medcolator®

MODEL K

WITH

RECIPROCAL STIMULATION

$295.00

An adjunct therapy for sprains, strains, dislocations, other trauma of the muscle and skeletal system. The MEDCOLATOR Model K combines the Simplicity of Model 50 with the Utility of Model 50B.

WRITE
For Your FREE
Pad Placement
COLOR CHART
For Wall Hanging

MEDCO PRODUCTS CO.
3603 East Admiral Place • Tulsa, Oklahoma

Medco Products Co.
Mail Address: P. O. Box 3275-P
3603 E. Admiral Pl. • Tulsa, Oklahoma

- ☐ Please send Pad Placement Color Chart.
- ☐ Please send MEDCOLATOR Model K with Reciprocal Stimulation for 30 day FREE trial.
- ☐ Please send descriptive literature on MEDCOLATOR Model K.

NAME_____

ADDRESS_____

CITY_____ STATE_____

Serving the Profession Since 1932

THE physical therapy REVIEW

60 Vol. 35, No. 2

published monthly by the
American Physical Therapy Association
at 1790 Broadway, Room 310
New York 19, N. Y.

Editor-in-Chief: E. Jane Carlin

Associate Editor: Beatrice Whitcomb

Managing Editor: Carol Vance

Assistant Editors: Helen Hislop, Mary E. Kolb, Ruth M. Latimer, Kathryn Shaffer

Membership in the American Physical Therapy Association is $20.00 a year, including a subscription to THE PHYSICAL THERAPY REVIEW. Subscriptions for nonmembers to THE PHYSICAL THERAPY REVIEW, $6.00 a year; $6.75 in Canada and foreign countries. Single copies 75 cents. (50 cents to members.) Reentered on second class matter August 11, 1949, at the post office at New York, N. Y., under the act of August 24, 1912.

The statements in the manuscripts published in THE PHYSICAL THERAPY REVIEW are made solely on the responsibility of the author. The American Physical Therapy Association does not assume any responsibility for statements contained therein. Manuscripts accepted for publication in THE PHYSICAL THERAPY REVIEW are for exclusive publication and may not be published elsewhere without permission.

Officers

President ..... Mary E. Nesbitt
Vice-President ..... Lucille Daniels
Secretary ..... Dorothy Graves
Treasurer ..... Dorothy Hoag
Speaker, House of Delegates ..... E. Jane Carlin

Directors

Dorothy Fredrickson .....Nashville, Tenn.
Harriet S. Lee ..... Washington, D. C.
Sarah Rogers ..... New Orleans, La.
Mary Clyde Singleton ..... Warm Springs, Ga.

Advisory Council

Amos Christie, M.D. ..... Nashville, Tenn.
William T. Green, M.D. ..... Boston, Mass.
Charles C. Letourneau, M.D. ..... Chicago, Ill.
Raoul Psaki, Lt. Col., MC . . San Francisco, Calif.
Auba T. Severinghaus, Ph.D. . . New York, N. Y.
Arthur Watkins, M.D. ..... Boston, Mass.

National Office Staff

Executive Director ..... Mildred Elson
Associate Executive Director .. Mary E. Hasskell

Educational Services
Dorothy R. Hewitt
Helen Hickey Elizabeth MacAuley

Professional Services
Lucy Blair Ruth Whittemore

Table of Contents:

Innervation of Mammalian Muscle—Anthonie van Harreveld, M.D. 67

Home Care Instructions—Lois Olmsted . . 75

Problems in the Physical Habilitation Program for Cerebral Palsy—Florence A. Liljander 80

Acetic Acid Ionization: A Study to Determine the Absorptive Effects upon Calcified Tendinitis of the Shoulder—Constantine G. Psaki, M.D., and Joseph Carroll, Ph.D. 84

Index to Current Literature 87

Editorials 88

Association Activities 90

Conference 1955 94

General News 97

Physical Therapy Programs—1955 . . . 99

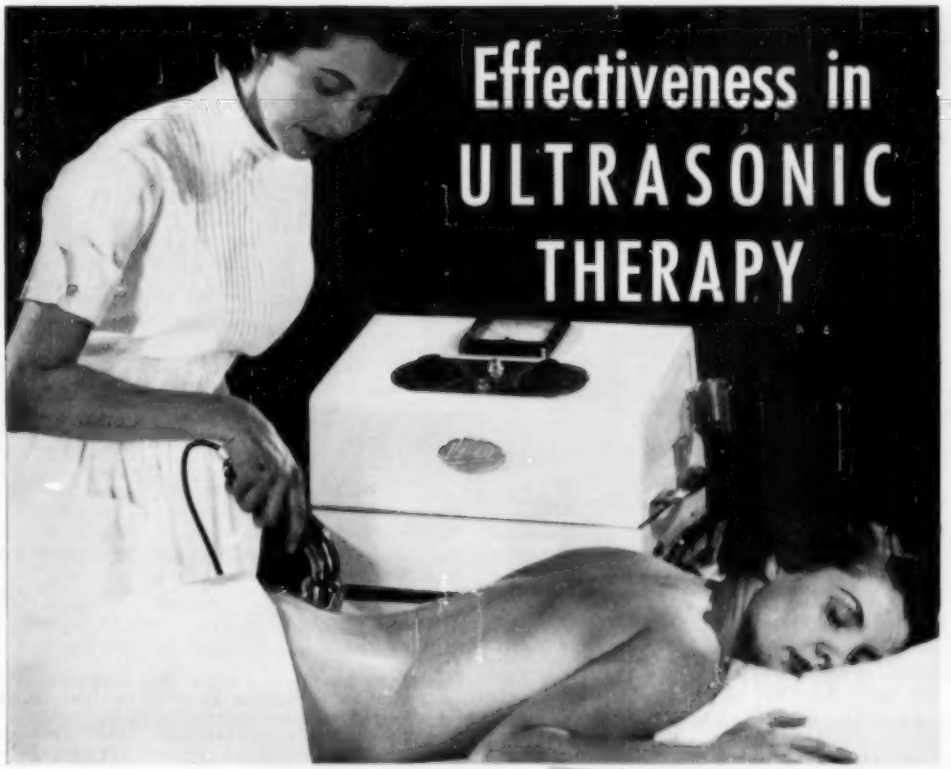
Abstracts 101

Book Reviews 104

Our Book Reviewers for February 108

Publications and Reprints 62

Available in a Microfilm Edition



● Results in ultrasonic therapy depend on direct transmission of energy from the applicator head into the tissues. To assure this continuity of ultrasonic energy, the Burdick Ultrasonic Unit provides a coupling signal, which notifies the operator of inadequate contact. This is just one of the features which distinguishes the Burdick UT-1 as your ultrasonic unit of choice.

THE Burdick UT-1 ULTRASONIC UNIT

THE BURDICK CORPORATION
MILTON, WISCONSIN

Publications and Reprints

RECRUITMENT

Physical Therapy — A Service and a Career, 1953 — An illustrated brochure with information for prospective students about physical therapy, the course of study, and opportunities for a career.

Schools of Physical Therapy — A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

Job of the Physical Therapist — A complete description of what the physical therapist does, where he works, how he functions in the professional field, and worker characteristics.

ORGANIZATION

Code of Ethics of the American Physical Therapy Association.

Personnel Policies for Physical Therapists.

Use of Nonprofessional Personnel — An illustrated pamphlet to assist the physical therapist to determine the need for nonprofessional personnel and to give guidance on inservice training and utilization.

Approved Schools and Courses of Physical Therapy 1928-1954.

Essentials of a Hospital Department — Physical Therapy (To members 25¢).

State Registration of Physical Therapists — Abstracts of state laws regarding registration of physical therapists.

A Bibliography on Supervision — Beatrice E. Whitcomb, Major, WMSC (15¢)

A Guide for the Chief Physical Therapist: Organizational Responsibilities — Margaret L. Moore (15¢)

SCIENTIFIC REPRINTS

Active Games for Physically Handicapped Children — Gump and Yuen-Hung Mei (10¢)

Physical Therapy in Medical Diseases of the Chest — Evelyn A. May (10¢)

Physical Therapy in the Early Care of Cold Injuries — Mary E. Sacksteder, Capt., WMSC (10¢)

Administration of a Community Rehabilitation Center — Hazel E. Furscott (10¢)

Evaluation of Strength and Motor Development in Infants — Elizabeth Zausmer (20¢)

Physiology of the Heart and Circulation and Its Clinical Application in Physical Medicine — a bound edition of papers by nine authors with an introduction by Harry D. Bouman, M.D., Coordinator. (50¢)

Physical Therapy Program for the Upper Extremity Amputee — Hyman Jampol (10¢)

Reading References for Electrical Diagnosis and Electrical Stimulation (10¢)

Plan and Specifications for an All-Welded Steel Treatment Pool (No Charge)

VISUAL AIDS

The following visual aids are available on loan to members and chapters upon request. They should be requested one month in advance of the date to be shown and return shipping costs must be paid by the borrower.

Recruitment

Within Your Hands — Black and white 17½ minute sound picture depicting the education and opportunities for the profession of physical therapy. Each chapter (and district) also has a copy of this film. A special 14½ minute version for telecasting is available from the National Office.

Physical Therapy, A Career of Science and Service — A color filmstrip to interpret physical therapy to high school students and lay groups. Each chapter (and district) has a copy of this and additional copies may be purchased from the National Office at $4.50 per print.

Professional

Movies

Peripheral Nerve Injuries (Upper Extremity) — Two reels black and white, silent.

Physiotherapy in Chest Conditions (Asthmatic Children) — Black and white, silent, made in England.

Slides

Underwater Exercise — A set of 26 Kodachrome slides made at the Orthopedic Hospital in Los Angeles describing equipment and technics of underwater exercise.

Peripheral Nerve Injuries, Upper Extremity — A set of 15 black and white slides showing examples of upper extremity nerve injuries. These slides require a projector that will take slides — size 3¼ by 4 inches.

Special Issues of the Review

Polio Issue (July 1951) (25¢)

Polio Issue (July 1952) (25¢)

Polio Issue (July 1953) — 50¢ (10 to 50, 35¢; 50 or more, 25¢)

Cerebral Palsy Issue (February 1952) (25¢)

Abstracts Reprinted

"Haltung," an Abstract from Body Posture by Magnus, and "Head Posture and Muscle Tone," Clinical Observations by A. Simons, abstracted by Signe Brunnstrom, have been reprinted in one pamphlet.

Reprints can be ordered from the American Physical Therapy Association, 1790 Broadway, New York 19, New York. The cost of the pamphlet containing both abstracts is $1.00.

All requests should be addressed to
American Physical Therapy Association
1790 Broadway, New York 19, New York

ANNOUNCING

the New Medi-Sonar Portable

ULTRASONIC GENERATOR

This unprecedented new Model 1100 *PORTABLE* MEDI-SONAR Ultrasonic Generator is unquestionably the finest instrument available anywhere at any price. Its claim to *absolute superiority* rests in several extremely important factors, most of which are exclusive with Dallons. Its incomparable quality gives more dollar-for-dollar value... more power, better control, finer engineering. Price, complete **$535.00 f.o.b. Los Angeles**

Dallons 1st IN ULTRASONICS

- "Console" quality and output at "portable" prices.
- Guaranteed minimum output total of 20 watts—Actual output, not just rated.
- Larger precision-ground quartz crystal—10 sq. cm.
- Specially designed safety transducer.
- Dual-scale meter for "at-a-glance" direct reading of total watt output and watts per sq. cm.
- Stepless output control for accurate dosage duplication.
- Even distribution of energy at low temperatures in full cylindrical pattern.
- Resonance control for positive tuning under all conditions.
- All metal, well ventilated, case with protective cover.
- Written one year guarantee on both machine and transducer.
- Made under U.S. Patents, U/L inspected and approved, CSA approved and Certified under FCC regulations.

For Professional Literature, Write

DALLONS LABORATORIES, INC.

5066 Santa Monica Blvd., Los Angeles 29, Calif.

IN THE HOSPITAL
Hydrocollator Master Unit maintains ready supply

IN THE HOME
Heat in any vessel on stove

WRAP IN TOWEL

NO WRINGING
NO DRIPPING

30 MINUTES MOIST HEAT WITH EACH APPLICATION

APPLY

EFFECTIVE MOIST HEAT EASILY APPLIED

HYDROCOLLATOR

Steam PACK

Everyone agrees moist heat is most effective in reducing spasm and pain. Now it can be easily and efficiently applied! Hydrocollator Steam Packs require no wringing, won't drip, are easy to prepare and handle. In use in leading hospitals and treatment centers.

ACCEPTED BY THE COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION (AMA)

WRITE FOR DESCRIPTIVE FOLDER

CHATTANOOGA PHARMACAL COMPANY, INC.

CHATTANOOGA 5, TENNESSEE

Publication Requirements

Manuscript Form

1. One original and one carbon copy of each manuscript must be submitted. The author should retain one additional copy. Manuscripts should be submitted unfolded.
2. All articles should be typed, double-spaced, on only one side of the sheet. Opaque white paper of standard size (8½" x 11") should be used. Onion skin is not acceptable for editing and type setting. A margin of at least one inch should be left on all four sides of each page.
3. It is the policy of the *Physical Therapy Review* to omit reference numbers in the text; however, the author's name should appear if he is quoted. Acknowledgments for material may be made by means of a detailed bibliography which should follow the form shown in Fishbein's "Medical Writing."
4. All pages must be correctly numbered.

Illustrations

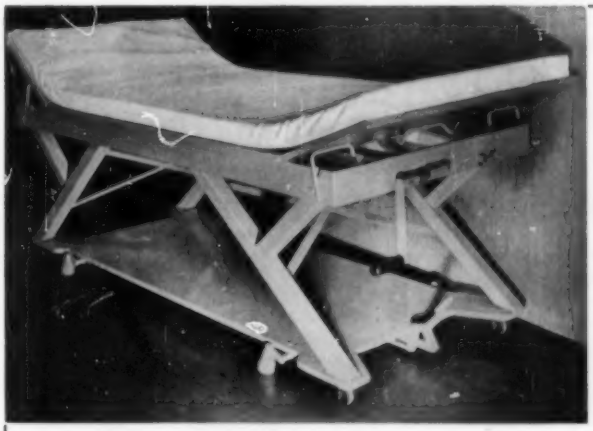
1. Illustrations should be carefully chosen and only those necessary to clarify the text should be included. A limit of four illustrations per article has been set. Additional illustrations, upon the decision of the editorial board, may be charged to the author.
2. Photographs must be glossy prints of sufficient size to be reproduced. No snapshots or negatives can be accepted.
3. Graphs, charts, and tables must be distinct, and large enough to be readable when reduced for printing. Dots, dashes and symbols should be widely spaced so that they will not form a line when reduced.
4. Line drawings and similar material must be done with India ink on heavy white paper.
5. When photographs of people are used, the author of an article containing such photographs should secure written permission for their publication from the person. He should inform the editor that permission has been obtained when he submits the manuscript.
6. Each illustration should have a number on the back corresponding to the figure number in the text. (To protect the glossy surface of the photograph use a soft pencil or crayon.)
7. Do not use paper clips on photographs as they may damage the surface.

Legends

1. Each illustration must be accompanied by a clear, concise legend. Detailed explanations should be contained in the text.
2. Legends should be on a separate sheet of paper and numbered to correspond to the number of the illustration.

Proofs

1. Galley proofs of the paper are sent to the author with reprint order forms and reprint prices.
2. Proofs should be returned promptly with only *necessary* changes or corrections.



Research shows that
Standard Therapy Tables
in use today
are of 1850 design.

Can Physical Therapists
use modern technics
to advantage
with tables designed
for a century ago?

EQUIP WITH **TERRY TABLES**

DESIGNED FOR **TODAY**

PHYSICAL THERAPY EQUIPMENT INC. 1706 Geddes Ave., ANN ARBOR, MICHIGAN

Georgia Warm Springs Foundation

GRADUATE COURSE

Physical Therapy and Occupational Therapy
in the Care of Poliomyelitis

This course is open to graduates of approved schools of physical and occupational therapy. Such graduates must be members of the American Physical Therapy Association and/or American Registry of Physical Therapists, or American Occupational Therapy Association.

ENTRANCE DATES: First Monday in January, April and October.

COURSE I—Emphasis on care of convalescent neuro-muscular disease with intensive training in functional anatomy, muscle testing, muscle reeducation and use of supportive and assistive apparatus. This course is complete in itself.

COURSE II—Three months duration with Course I prerequisite. Emphasis on care of severe chronic physical handicaps with intensive training in resumption of functional activity and use of adaptive apparatus.

IN-SERVICE TRAINING PROGRAM—Fifteen months duration at salary of $225 per month plus full maintenance. This program includes training in Course I and II.

TUITION: None. Maintenance is $100 per month. For scholarship to cover transportation and maintenance for Courses I and II, contact National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, New York. (Scholarships require two years of experience.)

For further information contact:

Robert L. Bennett, M.D., Medical Director

Georgia Warm Springs Foundation
Warm Springs, Georgia

MOISTAIRE

The Original Heat Therapy Unit

UNEXCELLED

for the delivery of moist heat at the exact prescribed temperature.

COMFORT • SAFETY • DURABILITY

MOISTAIRE accepted and approved since 1944 by the Council on Physical Medicine and Rehabilitation (AMA) and Underwriters' Laboratories.

For illustrated information write, wire or call:

The **RIES** *Corporation*

515 SOUTH AIKEN AVE., PITTSBURGH 32, PA.

TO HIDE YOUR LIGHT UNDER A BUSHEL

MATTHEW 5:15

There are those among Therapists who, though having attained proficiency, yes, even fame in other fields, have been inspired to forego such prestige and consecrate a life to a less celebrated profession. Some may be musicians of eminence or an acclaimed lady wrestler. Indeed, it would be most gratifying to know more of these fine people who go about their daily work as a Therapist, their patients and fellow workers unmindful that this skilled person has a great hidden light.

In 1952, Helsinki, Finland, was the excited host of the Olympic Games. Selected athletes from the earth's four corners encamped, each prepared by years of rigorous training for this greatest of all competitive sports event.

Event follows event, but nothing creates more excited anticipation than the wide open, flesh-searing 400 meter run.

The starter's gun speaks! Six young men project themselves. At 200 meters a wild, roaring stadium senses a new record in the making...but there is no choice among the myriad of flashing legs. Then... ever so slowly...a 10 centimeter longer stride... a finer heart...a runner emerges...The tape is in view. Can he do it? The will, the legs, the heart, the intelligent direction, and that final drive are there, and the world acclaims a new champion in the unbelievably short period of 45.9 seconds after the starter's gun.

So now visit the Department of Physical Medicine and Rehabilitation at Cedars of Lebanon Hospital, Los Angeles. Here you will meet a quiet, unassuming man clad in white, a triangular patch on his left arm. As you eavesdrop on his activities, you will be impressed with his reserved smile, the confidence of each patient, the efficiency of movement, the sincerity of purpose...meet George Rhoden, RPT. Chief of the Department, John Aldes, M.D., together with fellow Therapists, proclaim George Rhoden is also a champion Therapist.

The new champion, Jamaican, George Rhoden.

To design and honestly manufacture equipment for Physical Medicine requires excellence in engineering, the will to produce the finest, and first-hand knowledge of the therapy. In spite of over a quarter of a century devoted to Physical Medicine and its tools, I am well aware that no machine, no instrument, achieves results without the serious guiding intelligence of the Therapists employing it. I welcome new concepts, new technics, and suggestions.

Cecil Birtcher

PRESIDENT

Birtcher

WORLD'S LARGEST VOLUME PRODUCER OF ELECTRO-MEDICAL-SURGICAL DEVICES

4371 Valley Boulevard, Los Angeles 32, California

The Physical Therapy Review

Official Publication of The American Physical Therapy Association

Vol. 35 February 1955 Number 2

*Innervation of Mammalian Muscle**

Anthonie van Harreveld, M.D.

It is well established that vertebrate striated muscles receive many nerve fibers other than those mediating the muscle contraction. From one-third to one-half of the nerve fibers in a nerve innervating a muscle are sensory. In addition sympathetic fibers reach the muscle. The sympathetic fibers nowadays are believed to serve the blood vessels of the muscle exclusively (Hinsey), and therefore should not be considered as part of the muscle innervation proper.

Several sensory endings are found in the muscle. The most conspicuous of these are organs which are stimulated by stretch of the muscle, and therefore are called stretch receptors. They are connected with the central nervous system by thick sensory nerve fibers. Other sensory endings are pacinian corpuscles found in fascia, and intramuscular connective tissue; they are pressure receptors. Furthermore pain sensations can be evoked in the muscle so that pain endings must be present. All or part of the latter sensation is mediated by thin sensory nerve fibers.

Since the stretch receptors have been found to play an important role in the physiology of tone and probably in the mechanism of spasticity they deserve a more detailed description. Two kinds of stretch receptors are present in the muscle. In the muscle belly are found complicated organs, the muscle spindles; in the tendons less complicated, tendon spindles. According to some authors the latter are not restricted to the tendon but also may be present in the muscle belly. The muscle spindle consists of from two to six thin muscle fibers (intrafusal fibers) enclosed in a connective tissue capsule. The polar regions of the intrafusal muscle fibers (figure 1,A) have the structure of voluntary muscle, they are striated and the nuclei are sparse. The middle or equatorial region of the muscle fiber is somewhat swollen and contains a large number of nuclei. A rod like core formed by nuclei extends for some distance on both sides of this "nuclear bag" into the muscle fiber. This part of the intrafusal fiber is the myotube region. Sensory nerve fibers end on the nuclear bag and on the region of the myotube (figure 1,C). At least one thick (8-12μ) sensory fiber ends here, forming rings and spirals around each of the intrafusal fibers (figure 1,D). In addition there may be one or two thinner sensory fibers (6–9μ) which end in similar fashion on the intrafusal muscle fibers. The ending of the thick fiber was originally called the annulospiral ending by Ruffini who first described the muscle spindles; the endings of the thinner fibers, the flower spray endings. In the recent excellent description of the muscle spindle by Barker no consistent differences in the endings of these fibers were found, and this author proposes to call the endings of the thick fibers primary, and those of the thinner fibers secondary endings. In addition the muscle spindle receives a motor innervation for its intrafusal muscle fibers (figure 1,B). Each muscle

From the William G. Kerkhoff Laboratories of the Biological Sciences, California Institute of Technology.

Professor of Physiology, California Institute of Technology, Pasadena.

* Presented at the Annual Conference of the American Physical Therapy Association, Los Angeles, June 1954.

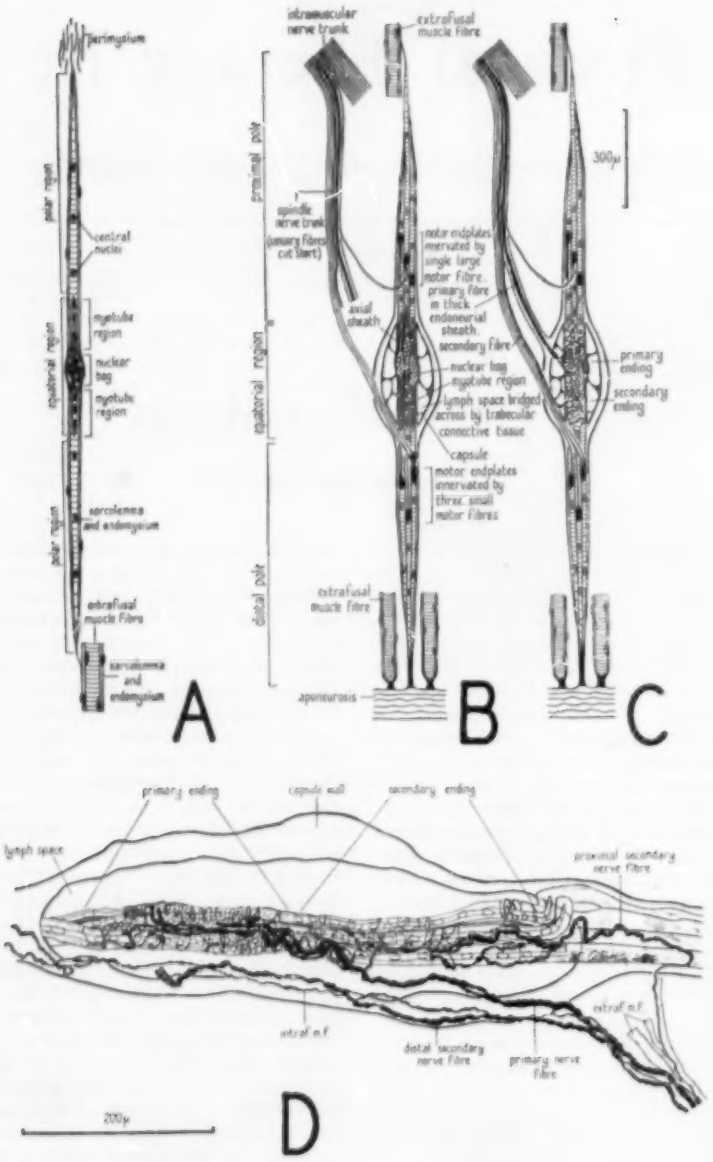


Figure 1. A, Diagram of a single intrafusal muscle fiber (polar regions have been shortened). B and C, Diagrams of muscle spindles (polar regions shortened). In B the motor innervation is shown, but the sensory innervation has been omitted to demonstrate the structure of the equatorial region. Motor end plates are represented by black disks. In C the sensory innervation has been added (one primary and one secondary ending).

D, Equatorial region of a reconstructed rabbit's muscle spindle. The distal secondary ending has been omitted to avoid confusion. *Intraf. m. f.*, intrafusal motor nerve fiber innervating distal pole of the spindle. *Extraf. m. f.*, motor nerve fibers innervating extrafusal muscle fibers (from Barker, Quart. J. Microsc. Science, 89:143, 1948).

fiber has at least two end plates one on each side of the nuclear bag. The intrafusal fibers are attached either to the endomysium of the regular (extrafusal) muscle fibers or to the tendon. The muscle spindles are not more than a few millimeters long and are in general distributed rather evenly through the muscle.

The other stretch receptors found in the muscle are the tendon spindles which are small portions of the tendon, a few mm. long and 0.1–0.2 mm. wide, enclosed in a sheath of connective tissue. Nerve fibers which end in the tendon spindles branch freely and end in club shaped enlargements. Such endings are usually called flower spray endings.

The sensory endings of the muscle spindle are stimulated by stretch of the nuclear bag and myotube region. Such a stretch can be achieved in two ways. By stretching the entire muscle all muscle fibers including the intrafusal fibers will be stretched. The second way is by contraction of the polar ends of the intrafusal fibers which will stretch the nuclear bag and myotube region. The tendon spindles can be stimulated in only one way, by stretch of the tendon.

Due to the location of the muscle and tendon spindles, muscle contraction can be expected to influence these stretch receptors differently (figure 2). A contraction of the muscle belly will stretch the tendon and thus cause a discharge in the tendon spindles. A shortening of the extrafusal fibers during muscle contraction will decrease stretch in the intrafusal fibers and thus can be expected to decrease or even stop a discharge in the muscle spindle caused by stretch of the muscle before the contraction was evoked. It is customary to express this difference by saying that the tendon spindles are located in series with the muscle, the muscle spindles in parallel.

Matthews investigated preparations in which he could lead off nerve action potentials elicited by a single stretch receptor, and found that stretch caused the receptor to produce nerve action potentials at regular time intervals (figure 3,A). The greater the stretch the higher the frequency of such trains of action potentials became. Some of the stretch receptors (A_1 type) investigated by Matthews when made to respond by stretching the muscle, stopped producing nerve action potentials during muscle contraction

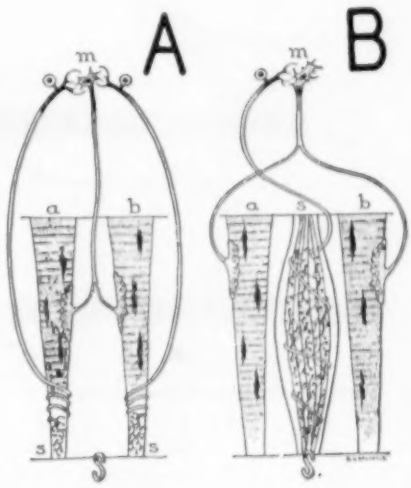


Figure 2. The muscle spindle (B) contrasted with the tendon stretch receptor (A). The muscle spindle lies in parallel with the contracting fibers; when these fibers contract, stretch on the spindle will be taken up and a stretch stimulus will cease to be effective. In the tendon organ any tensile force, whether active or passive, will affect the end organs indiscriminately. a and b are extrafusal muscle fibers; s denotes stretch receptor, m is a motoneurone (after Fulton and Pi-Suñer, Am. J. Physiol., 83:554, 1928).

(figure 3); in others (B type) the frequency of the response increased during contraction (figure 3,B) showing that indeed some receptors are placed in parallel, others in series with the extrafusal fibers.

It is possible to remove all sensory fibers from a motor nerve by the extirpation of the relevant spinal ganglia and allowing time for the degeneration of the sensory fibers. Eccles and Sherrington found in motor nerves so treated, two groups of motor nerve fibers, one group between 8 and 18μ thick and another between 2 and 8μ (figure 4). It has become more and more evident in the last few years that these two groups of fibers have different functions in the mammals. It was noticed by O'Leary, Heinbecker and Bishop and by Leksell that stimulation of the group of thin nerve fibers has no evident motor effect, and that contraction of the muscle is

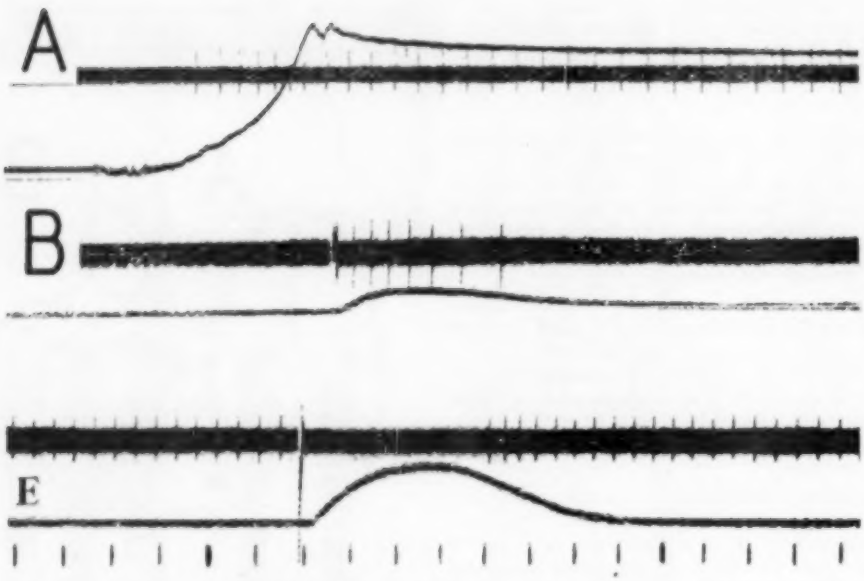


Figure 3. A, Response to stretch of a stretch receptor (B type) in the soleus muscle of the cat. Upper trace is a record of the nerve action potentials, lower trace indicates the stretch of the muscle to a final tension of 260 grams.

B, Response of a B type stretch receptor (in series with extrafusal muscle fibers) in the soleus muscle to a maximal isometric twitch contraction of the muscle (initial tension 130 grams). Upper trace is the nerve action potential record, lower trace records the muscle contraction.

E, Response of an A_1 type stretch receptor (in parallel with the extrafusal muscle fibers) to a maximal isotonic twitch of the cat's soleus muscle (tension 40 grams). Upper trace is a record of the nerve action potential. Middle trace shows the muscle contraction. Lower trace indicates time in periods of 1/20 second (from Matthews, J. Physiol., 78:1, 1933).

mediated exclusively through the stimulation of the group of thick fibers. It was surmised by these authors that the group of thin fibers innervates the intrafusal fibers of the stretch receptors. This hypothesis has been fully confirmed by Kuffler and his co-workers † in a series of beautiful investigations. In this work single isolated thin motor nerve fibers were stimulated. It was shown that such stimulation had no obvious mechanical effect, but caused discharges in sensory fibers originating in the muscle. In preparations in which single thin motor fibers were stimulated and the sensory response of the muscle spindle innervated by that particular motor fiber was recorded, the following observations were made. Stretch of the muscle as well as stimulation of the small motor fiber caused a discharge in the sensory ending of the muscle spindle (figure 5). The discharge caused by a short stimulation of the thin motor fiber usually consists of a number of impulses. An impulse train, caused by such a stimulus, was of longer duration and of higher frequency the more the muscle was stretched initially.

In similar preparations the effect of contraction of the extrafusal muscle fibers on the discharge produced by stretch and by stimulation of the small nerve fiber was investigated. As Matthews had observed in his type A_1 receptors the contraction of the muscle stopped the discharge caused by mild stretch of the muscle (figure 6,D). Such an arrest of the discharge could be counteracted by simultaneous stimulation of the thin motor nerve fiber causing the contraction of intrafusal muscle fibers (figure 6,C). Under high initial tension of the muscle, part of these muscle spindles showed an increase in the discharge frequency during the exclusive stimulation of the extrafusal muscle fibers.

As mentioned, muscle contraction is mediated

† See Bibliography-references 8, 9, 10.

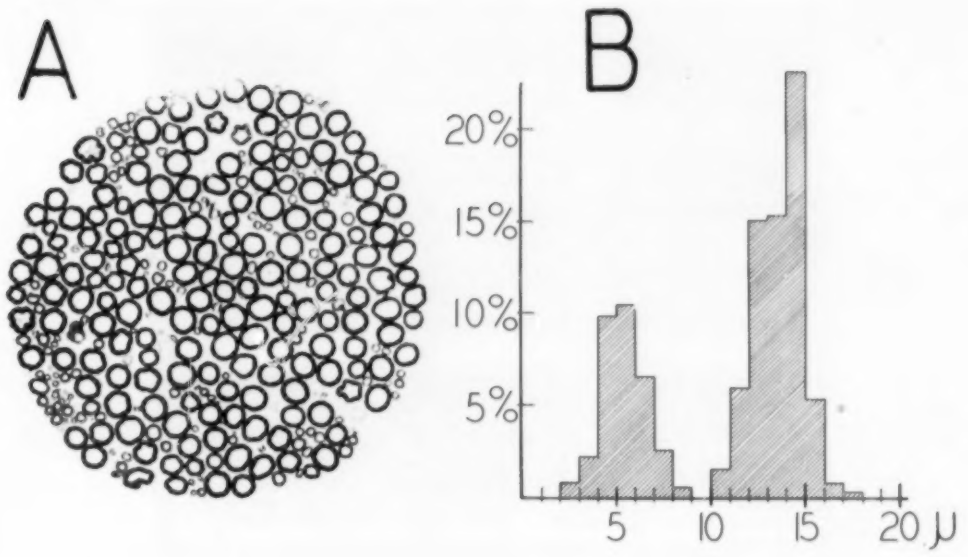


Figure 4. A, Cross section of a branch of the motor nerve for the m. gastrocnemius medius (cat) from which the sensory fibers have been removed. The rings are the cross sections of the myelin sheaths stained black with osmic acid. The fibers fall clearly in a group of thick fibers and a group of fibers of considerably smaller diameter. Magnification 410X.

B, Shows a histogram of the motor nerve for the m. gastrocnemius medius. In this graph the percentage of fibers with a certain diameter were plotted against the fiber diameter in microns. The histogram clearly shows that the fibers fall in two groups, one between 2 and 9μ and one between 10 and 18μ. The groups in this nerve do not overlap (after Eccles and Sherrington, Proc. Roy. Soc. London, Series B, 106:326, 1930).

by a relatively small portion of all the nerve fibers in a motor nerve; namely, by the group of thick (8-18μ) motor nerve fibers. The number of muscle fibers in a given muscle is considerably larger than the number of thick motor nerve fibers innervating it. To reach each individual muscle fiber the thick motor nerve fiber forms an extensive branching in the muscle. The finest branches of this ramification end on the muscle fiber with an end plate (figure 7), where the nerve impulse sets up an action potential in the muscle fiber. This action potential is propagated over the entire muscle fiber and initiates the contraction. A thick motor nerve fiber with all the extrafusal muscle fibers it innervates, forms a functional unit, called the motor unit. Attempts have been made in the past to determine the number of muscle fibers in a motor unit by dividing the total number of muscle fibers in a muscle by the total number (thin ones and thick ones) of motor nerve fibers. The discovery of the function of the group of thin motor nerve fibers necessitates a correction of this value. It seems certain, however, that the number of muscle fibers forming a motor unit in a muscle of an extremity is of the order of 100 to 200.

A good deal is known about the function of the stretch receptors in the muscle. Stimulation of the muscle spindles, which have a much lower threshold for stretch than the tendon spindles, are believed to supply the sensory impulses for the tendon reflexes and also for tone. The reflex path for these reactions consists of only two neurons, the sensory and the motor, forming a connection (synapse) in the spinal cord. Since only one synapse is involved in this reflex arc these reflexes are called monosynaptic. Another characteristic of these reflexes is that they remain restricted to the muscle and even to that portion of the muscle in which the muscle spindles are situated from which the reflex was evoked. Although less spectacular, the sensory impulses

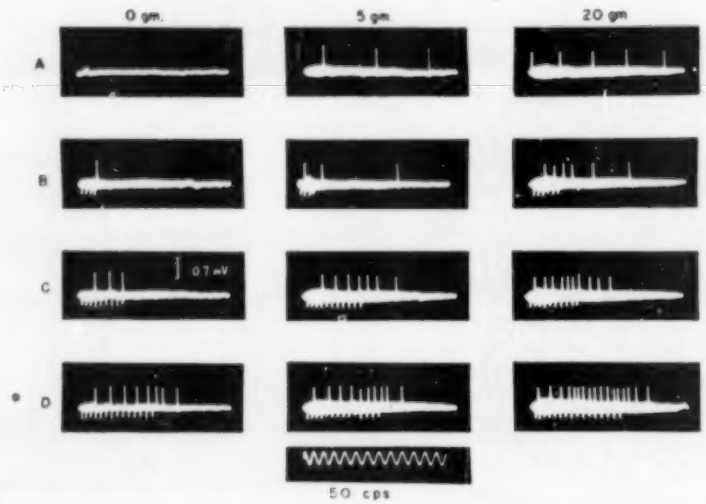


Figure 5. Action potential recording of a single sensory nerve fiber connected with a muscle spindle in the cat's soleus muscle. The large upward deflections are the nerve action potentials. The external stretch on the muscle in the vertical columns of figures is 0 gram, 5 grams and 20 grams respectively. In the horizontal rows of figures B, C and D, a single thin motor nerve fiber for the intrafusal muscle fibers of the same muscle spindle was stimulated at a frequency of 100 per second. The small downward deflections are the artefacts of this stimulation. In the horizontal row A, no stimulation, B, 4-6 stimuli; in C, 9-11 stimuli, in D, 14-16 stimuli. Note the change in discharge rate at different tensions (horizontal row A). The effectiveness of the small nerve stimulation is greater at higher tension. The discharge rate and number of nerve impulses increases with the number of stimuli. The time signal is a sinusoidal line of 50 cycles per second (from Kuffler, Hunt and Quilliam, J. Neurophysiol., 14:29, 1951).

from muscle spindles have other and more widespread effects. They cause facilitation of reflexes in muscles synergistic with the one in which the muscle spindle giving rise to these sensory impulses is situated. This means that, although these impulses do not cause a discharge in the motor nerve fibers of the synergistic muscles, they lower the threshold of excitation of the large motor nerve cells in the ventral horns of the spinal cord which give rise to these motor nerve fibers (Lloyd). Another effect produced by impulses coming from muscle spindles is inhibition of the motor nerve cells connected with the antagonists of the muscles in which the particular muscle spindle is situated.

The function ascribed recently to the tendon spindles is a different one, namely that of inhibiting the monosynaptic tone and tendon reflexes produced by the muscle spindle (McCouch, Deering, and Stewart). A strong tendon reflex contraction thus can be expected to inhibit itself through stimulation of the tendon spindles by the contraction (auto inhibition, Granit).

During stretch and contraction of a muscle its motor nerve cells are subjected to exciting and inhibiting impulses which are set up in the stretch receptors of the muscle itself. A further complication is provided by the observation of Hunt * that during a reflex contraction in a muscle the activity in its thin motor nerve fibers is increased. As mentioned previously the resulting contraction of the intrafusal muscle fibers may produce a discharge of the sensory ending of muscle spindles notwithstanding the contraction of the extrafusal fibers.

The impulse patterns set up by stretch and contraction in the sensory endings in muscles are by no means simple ones, they are further complicated by the activity of the intrafusal muscle fibers during reflex activity. It will be a task of

* See reference 14.

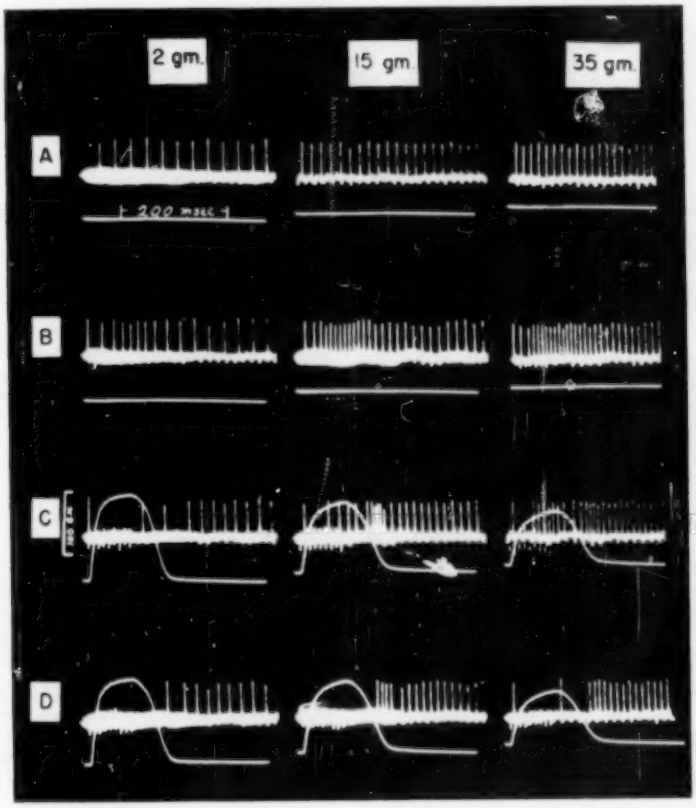


Figure 6. Recording from a single sensory nerve fiber connected with a muscle spindle in the m. flexor digitorium longus of the cat. Initial tension in the vertical columns of figures is 2 grams, 15 grams and 35 grams respectively. The upper trace in each figure is a recording of the nerve action potential. The lower trace indicates tension of the muscle in the horizontal rows A and B and tension developed during contraction in rows C and D. Horizontal row A shows the discharge produced by passive stretch of the muscle. In row B stimulation of an isolated thin motor nerve fiber for the intrafusal muscle fibers of this muscle spindle with 9 stimuli at a frequency of 100/sec. The effect of this stimulation is enhanced with increase of the initial tension. No visible contraction of the muscle results. In row D nerve fibers for the extrafusal muscle fibers are stimulated causing muscle contraction. The sensory discharge is arrested during the contraction. In row C the thin motor fiber for the intrafusal muscle fibers is simulated (as in B) simultaneously with stimulation of the motor nerve fiber for the extrafusal muscle fibers (as in D). The effect of the thin fiber stimulation under these conditions is slight when the initial tension is 2 grams but when the tension is 15 and especially when it is 35 grams the effect is quite marked (from Hunt and Kuffler, J. Physiol., 113, 283, 1951).

the future to unravel the effects and interactions of these impulse patterns, and to provide a scheme which explains reflex activity and probably also certain features of voluntary activity on the basis of the properties of the sensory innervation of muscle and the knowledge of the central property of the reflex arc. It is likely that such an analysis will have to take into account not only the receptors in the muscle but probably also receptors in skin, joints, and bones. A modest beginning has been made with this task but a large amount of work is still to be done.

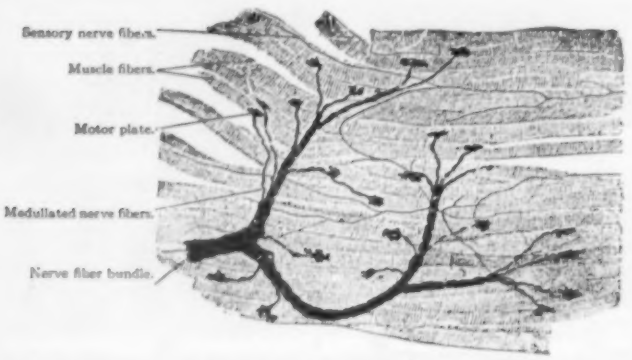


Figure 7. Motor nerve fibers and motor end plates of intercostal muscle fibers of a rabbit. Magnification 130X (from Lewis and Bremer, Textbook of Histology, P. Blakiston's Son & Co. Philadelphia, 1927).

(Editor's note. We wish to express our appreciation for the courtesy and cooperation of the authors and publishers of papers from which these illustrations have been made.)

REFERENCES

1. Hinsey, J. C.: J. Comp. Neurol., 44:87, 1927.
2. Ruffini, A.: J. Physiol., 23:190, 1898.
3. Barker, D.: Quart. J. Microsc. Sc., 89:143, 1948.
4. Matthews, B. H. C.: J. Physiol., 78:1, 1933.
5. Eccles, J. C., and Sherrington, C. S.: Proc. Roy. Soc. B.106:326, 1930.
6. O'Leary, J.; Heinbecker, P.; and Bishop, G. H.: Am J. Physiol., 110:636, 1934.
7. Leksell, L.: Acta Physiol. Scand., 10, suppl. 31, 1945.
8. Kuffler, S. W., and Hunt, C. C.: Proc. A. Research Nerv. & Ment. Dis.; 30:24, 1950.
9. Hunt, C. C., and Kuffler, S. W.: J. Physiol., 113:298, 1951.
10. Kuffler, S. W.; Hunt, C. C.; and Quilliam, J. P.: J Neurophysiol. 14:29, 1951.
11. Lloyd, D. P. C.: J. Neurophysiol., 9:439, 1946.
12. McCouch, G. P.; Deering, I. D.; and Stewart, W. B : J. Neurophysiol. 13:343, 1950.
13. Granit, R.: J. Neurophysiol., 13:351, 1950.
14. Hunt, C. C.: J. Physiol., 115:456, 1951.

Home Care Instructions*

Lois Olmsted, M.S.

We do not pretend to be specialists in educational methods. We undertook this assignment on Home Care Instructions because in our daily work we are in a good position to evaluate various methods of teaching used on parents. Instructions may be given just before parents take a child home from the hospital or in the home after the child has returned. Some things work well leading to surprisingly excellent work on the part of parents with no previous experience. Other methods leave the family in a state of confusion—not acute like that of the man watching his mother-in-law drive his new Cadillac over a cliff—rather a dreary confusion discouraging initiative.

Perhaps you will allow me to tell you a bit about our program. This will explain why we feel we have some knowledge of what part of home care instructions are especially effective both for immediate value and insuring long term care.

Orange County has had a home care program since 1940. At present there are four physical therapists employed. The case load is largely poliomyelitis. Patients are referred from the communicable disease unit of the County Hospital or, if hospitalization has not been required during the acute stage of the disease, referral comes from the family doctor. With the family doctor's approval treatment in either case is started immediately under standing orders. These orders were formulated in conferences with physical therapists by the orthopedist who holds a monthly clinic for poliomyelitis cases and Crippled Children Services cases. The orders have been approved by the Medical Advisory Committee of the local chapter of the National Foundation for Infantile Paralysis as well as by the Health Officer of Orange County.

Advantages

The program is essentially a teaching program rather than treatment. The physical therapist starts instruction of a responsible member of the family on the first visit—which may be a home check done prior to the child's release from the hospital. There are variations in the instructions, of course, depending upon the amount of involvement of the child and the ability of the parent. The aim is, regardless of the severity of the paralysis, to give the parents total responsibility under the supervision of the physical therapist just as quickly as possible. This as you can see requires careful preparation. We do have an advantage over the physical therapist working in a department in so far as insuring effective teaching is concerned. First, we are in the home situation and can see obstacles to carrying on a good treatment program which a parent might fail to tell the therapist. Second, we are aware very quickly if the mother did not understand the directions given and can then pick up points missed without undue delay. This can be quite embarrassing as when a careful explanation of how to make a foot board, a little about its purpose and value, and a brief word about how to use it led a conscientious mother to place a well made foot board—the kind with blocks to separate mattress from board—correctly, then have a difficult time tucking the bed covers over the end of the mattress in front of the board. It was especially hard to get the covers smooth where the blocks pressed against the mattress, and the blocks held the covers so tight over the child's feet that he was quite uncomfortable. There was no question about where the teaching had fallen down.

A third advantage of teaching in the home is that the physical therapist can plan to include a limited amount of material at each session—giving the parent time to absorb one lesson before it becomes necessary to go on to the next. One big disadvantage in home teaching is the difficulty in guarding against distractions—other children demand attention, the house work is not done, etc.

We not only have an opportunity to evaluate our own teaching, but can often get pointers from what is being done by physical therapists elsewhere. Many families with youngsters needing physical therapy come to Orange County,

Supervisor of Physical Therapy, Health Department, County of Orange, California.

* Presented at the Annual Conference of the American Physical Therapy Association, Los Angeles, June 1954.

either because the husband is transferred here (we have one of the largest Marine Facilities in the country at El Toro) or because a warm climate seems desirable for a child who is extensively involved. Most of these families have had more or less formal instructions in exercises to be continued in the home.

Because the Health Department administers the Crippled Children Services as well as the Home Care Program and works closely with the local chapter of the National Foundation for Infantile Paralysis, a large number of these new comers are referred directly to us.

Most of the patients on the home care program are given appointments for the orthopedic clinic held once a month. The first appointment is as soon as possible after referral. The patient is brought in by ambulance if required and as often as necessary thereafter. So also the physical therapist goes in to see the patient at once upon referral and as often as necessary thereafter. This may be daily or twice daily at first and then with decreasing frequency until some patients may be seen only once a year.

Instructions for home care must be carefully planned because regardless of how much is to be included the time that can be allowed is necessarily short. Even if the busy physical therapist could forget all other responsibilities and schedule a number of periods with unlimited time for each period to instruct a parent in the technics of an exercise program, there is a limit to what even the most intelligent parent can absorb in each session. There is also a definite limit to the number of times parents can come into the department for instruction. One must take into consideration in planning that the parent needs more than a demonstration of therapeutic exercises if she is to be motivated to carry on the program at home.

OBJECTIVES

It might be a good idea to borrow a lesson from the school teachers. When making lesson plans the teacher starts with her objectives. In giving home care instructions our *first objective* is to give the parent adequate understanding and skill so that she may give or supervise prescribed exercises for the patient in his home.

A *second objective* is to help the parent appreciate the importance of the program.

A *third objective* is to help the parent understand the goal to be achieved—and this includes the limitations of any treatment program. A subhead might be *understanding the limitations of any treatment in order to adjust to a permanent disability if this is inevitable.* In other words the goal to be achieved must be realistic. In listing these as first, second and third, it is with no thought as to the relative importance.

THE LESSON

In making our lesson plan it is valuable to know as much about our pupil as possible—not her knowledge of this specific condition only. The parent's previous knowledge of the treatment or the apparatus affects the lesson plan considerably. If, as sometimes happens a relative or neighbor has had a similar condition we start with a background of information that makes our task easier. If for example the parent has never seen a brace such as the one ordered, we must be prepared to spend a little time on the subject of bracing before going into the specific lesson of applying the brace and care of the brace for her child. We do not have a neat evaluation of the parent's intelligence or summary of previous experience as a guide. Too often the physical therapist is entirely familiar with the patient but has little knowledge of the parent or responsible adult who must be taught. The approach will be quite simple if the mother has a background of education and discipline which will enable her to quickly grasp the reasons for doing this or that and understand the value of following instruction carefully. In this case the emphasis in the home instruction sessions will be mainly on the technics. On the other hand, we too often find ourselves dealing with an emotional parent whose education and experience have been such that she is very susceptible to what she reads and hears without the knowledge to evaluate and interpret. Since newspapers, popular magazines and TV give coverage to health subjects every parent will find something which applies to her child. The neighbor, the cousin back East who knew of a child with the same condition, even the clerk in the grocery store all have their contribution to make to a better treatment program. This must be taken into consideration in planning instruction for home care; otherwise, the next time the patient is brought in for checkup, if he does return, we may find that the carefully planned schedule has been changed beyond recognition. Emphasis here must be equally on the *why* and *how*.

Earlier the time element was mentioned. This is important especially in the first period allotted for home care instruction. Enough time must

be allowed so that the parent may ask questions. Usually before the parent is asked to take responsibility for the treatment of his child he has had the opportunity of discussing the case with the physician in charge, the nurse on the ward and also, if the child has been under treatment by the physical therapist for a time, with the therapist.

PRECAUTIONS

The physical therapist needs to know what each of her co-workers has told the parent and what part of the home care routine each will be responsible for teaching. Failure to correlate may lead to needless repetition and waste of time. Since no two people do things exactly alike the parent may feel that differences in technic imply differences in principle if the physical therapist attempts to demonstrate some procedure already taught by the nurse or vice versa. A conference to decide *who* should teach *what* should include joint understanding as to what the parent should be told as to the final results expected. False hopes, undue optimism given parents in the early stages of the disease are often responsible for long and costly searches for cures, failure to adjust to residual disability, refusal to use assistive devices, crutches, etc. The early convalescent period is no time to paint a black picture of wheel chair existence, but, if the child shows extensive paralysis neither is it a time to say "Work hard and you'll be playing football in the big league this time next year."

Often the parent's false belief in the extent to which her child will return to his pre-polio perfection (or the cerebral palsy child will attain normal neuromuscular patterns) is due not to any definite misinformation. It is due to an optimistic attitude which encourages the family to nourish beliefs that any one can see are quite unreasonable—any one except a parent desperately hoping for miracles.

A case of this kind came to my attention a year or so ago. A child had been in a respirator for four years, his longest period out about three minutes. He had had physical therapy during his convalescent period which had been spent in a well known institution where excellent therapy is given. He had a few trace to poor muscles in his arms. The legs were flail. The family heard good reports of a physical therapist who worked at a near by center. They persuaded the doctor to order treatments resumed. The boy was seen 2 or 3 times a week for several months. The family started a subscription to buy a swimming pool and rumors flew that Dickie would soon be out of his respirator and have hydrogymnastic therapy. And all this on the basis of the bright glow and encouraging comments on the part of a physical therapist who thought he found some traces of muscle not noted before. Families aren't at all sensible about interpreting the functional value of trace muscles and are more influenced by enthusiasm than test grades.

Reassurance

Theoretically of course, the mother already has a fair understanding of her child's condition and what will be expected of her when she takes the child home. (I say mother because she is usually the person taught, although every effort should be made to include the father in this program.) Actually, until the time comes for her to take on this responsibility for her child's care she has never considered the many details which now confront her. Many of her questions may deal with details too trivial to be of any importance in the total program of home care. We must remember that to the solicitous mother no detail is trivial and our unhurried attitude in dealing with all phases of her problem will go a long way toward insuring that she will not turn to others for guidance. Of course, sometimes it is important that they turn to others for help. The physical therapist who assumes responsibility for a home care program needs to know the community resources, where help can be secured for problems outside physical therapy; a mental hygiene clinic, an agency which provides transportation, a visiting nurse service, or a relief agency may give the family the emotional or financial help needed to make an adjustment. We need to be able to make the referral. Few parents have had experience to prepare them to treat a handicapped child and they approach the task with apprehension. The need for reassurance that she will be able to function adequately in this new role is often expressed in the endless requests for information regarding minor details of care, but details tied in with well known family situations. Questions may be used, of course, as a means of testing the physical therapist or of building up the parent as an equal participant in the interview.

Interpretation

Besides allowing time for discussion, we must allow time for the demonstration of positioning and exercises with necessary instruction as to method and equipment. Such a statement appears to be so very obvious as to be unnecessary:

after all that is the main purpose of the session. But let us examine the content of this part of the lesson. First we must translate all exercise instructions from our easily understood and definite terms into descriptive phrases that the parent can understand. To her, the words "abduct," "rotate," "flex," "extend" are meaningless jargon.

We must decide how much to include in our demonstration as to the why of the prescribed exercise. If we give too little the exercise may be changed until it is quite ineffective, if too much is included the parent becomes hopelessly confused—but more important she becomes hopeless. She simply cannot learn it all. In this demonstration we must transpose from a well equipped department to a home with usual home furnishings. It would certainly add to the effectiveness of the demonstration if the therapist equipped a "home care instruction" cupboard with improvised equipment and photographs of equipment not easily stored in the cupboard. This equipment must be either easily made or readily available; for example, the opponens splint or head traction. Most people, if given as incentive an understanding of the purpose of equipment, with a suggestion or two as to how it can be devised from objects usually found in the home or easily secured, are reasonably adept at improvising.

We must remember also that each exercise demonstrated must be done slowly and carefully with the parent seeing it from every angle possible. This is certainly no place for routine exercises.

One of the points stressed in a class on teaching given for factory foremen during the war read something like this:

"As well to say a salesman has sold when the customer hasn't bought—as to say a teacher has taught when the pupil hasn't learned."

Redemonstration

And so we come to the first test of our instruction for home care—the redemonstration by the parent. Many parents want to show how quickly they have mastered the lesson; others, fearful of not doing the job right, shy about trying something new or, afraid of appearing novices in the eyes of their children, resist this very important part of the instruction session. They want to see us do it just once more. I remember a precocious 8 year old who was very critical of his mother's return demonstration. She didn't hold his foot exactly as the physical therapist always did, her support of his knee didn't feel just the same, the assistance she gave wasn't smoothly adjusted to the contraction of his quadriceps muscle. She did not even know the quadriceps! The physical therapist knew that this mother was an expert horse woman and the physical therapist was afraid of horses. She used this knowledge to build up the mother's prestige, make the boy see that lack of knowledge of physical therapy technics was not a flaw in a person whom he had considered omnipotent. This critical attitude toward the parent which may lead to refusal to do exercises for her is common enough to deserve consideration in planning the demonstration. A word here and another there during the demonstration helps to indicate that there will be differences but these are immaterial. For example: point out that this is a new experience for the parent just as it was a new experience for the child when the physical therapist first started teaching him and look how good he is now, and above all show an unfailing attitude of respect for the parent even when the carefully demonstrated shoulder exercise becomes in her hands a futile wiggling of the elbow. Of course, you can't stand by and permit that, but a calm, "It sometimes works better if you do it this way," or "Perhaps if you would stand here thus"—and at the same time quietly manipulate parent and patient into a position and guide the exercise until she gets the feel of it. Never say "No, that isn't right" or "You've got it wrong—let me show you," which puts the parent on the defensive and disturbs the child's sense of security.

Written Instructions

Written instructions are, of course, essential in any plan for home care. Even if there are only two or three relatively simple exercises, directions for these should be written. Methods of giving written instructions differ with different departments. You are all familiar with the carefully prepared lists of exercises, some with illustrative stick figures. These are checked for the individual patient as to which of the many exercises described are in his program. These are excellent, have the advantage of careful editing by more than one person, and the format can be prepared for easy readability. They save time for the physical therapist in giving instructions. The *two disadvantages* in the use of these forms are: 1. The parent is floored by the large number of exercises. The fact that he is told only a few apply to his child, that the child is to do only the exercises checked, doesn't change the

fact that two pages of exercises on a mimeographed form do overwhelm the lay person. Parents are no different from physical therapists. How much easier we find it to have handy mimeographed pages for referral on materials frequently used, although the material is easily available in our standard reference books. 2. The second objection is the impersonal quality of prepared exercise instruction forms. As we know the patient well and get acquainted, even slightly, with the parent, we become better able to phrase instructions aimed toward the individual. I have known one physical therapist who provides pencil and paper and has the parent write the instructions in her own language as they are demonstrated, assisting her with suggestions. Since the exercise session needs to be repeated daily or even several times daily to gain the desired results, the instruction sheet needs not only to describe each exercise but also to tell exactly how many times it should be performed at each exercise period and how many such periods should be planned each day.

Rest

With many types of disabilities rest is just as important as exercises and in giving instructions for exercises, instruction for rest should also be given. For the ambulatory patient, does rest mean lying quietly in bed with shades drawn, or may he listen to radio or watch TV during rest period? For the bed patient, how strictly enforced should be the rest periods—after all, he is in bed all day. The rest period should be listed on the instruction sheet as to time of day and duration.

EQUIPMENT

Exact instruction also must be given regarding any equipment to be used. It isn't enough to tell the parent that the doctor wants the child to wear this splint all of the time, we must consider what that means to a parent. Many types of splints to be worn "all the time" really are supposed to be removed for cleansing the skin, but this needs to be said.

FAMILY ADJUSTMENT

Home treatment as the term indicates, is a part of a home situation. Instruction for such treatment can be effective only if the physical therapist takes into consideration this parent's other responsibilities and helps her work out a schedule which will allow this to be added without disrupting the household. The parent is the one who plans the schedule with the therapist suggesting the needs of the patient, the household, and how they may be met.

Without being too didactic we can often include a pointer or two to help the child find his proper place in the family. If his stay in the hospital has been prolonged he will experiment when he first goes home to try to establish a relationship which seems satisfying to him at the time—that is as the center about whom all else revolves. A firm hand and an understanding of his needs as a child can bring him in line. A part of the security a child needs is a strong adult who takes responsibility for guiding the child's actions. The situation becomes very difficult if the mother considers the child an invalid who must be humored in all things. One doesn't have to give a lecture on child psychology to suggest a more realistic approach to the child's adjustment. As one physician said "The gluteus maximus has functions not mentioned in the kinesiology text." We might suggest a different approach but the idea has merit.

The intelligent conscientious mother learns the technics taught; gets from the incidental teaching, given either in answer to questions or skillfully given during the demonstration, the importance of good medical supervision, that doctor's orders should be followed, and that the program prescribed is the best answer at present known for this particular child. She learns how to get and use equipment necessary at present, and how to care for equipment, such as braces, if these have been ordered prior to the first instruction period. She is given a definite date for a return visit with the assurance that she may return sooner if she has difficulty with the program. But it may be some time before the return visit, and the child, if he is a bed patient, will be in bed during this period—being hot packed and exercised part of the time perhaps. Part of the time he will watch TV, be visiting with his friends, and reading. Teaching good position prone and supine is not enough. We must think of positioning for other activities and, something which is easily forgotten, warn the mother to change the position of the bed so that the patient has equal opportunity of using muscles on each side as he reaches for articles on bed side table and turns to face visitors.

That is a great deal for the physical therapist to teach and the parent to learn in the two or three instruction sessions usually planned even if some periods for observation have been possible prior to the formal teaching period. But if we stop there we haven't discharged all of

our responsibility to the parent. In visualizing the home situation we must consider the factors that may make for physical strain on the mother. Where possible, for example, plan placement of the bed to avoid too much walking, elevate the bed to avoid back strain from bending—such environmental factors may be adjusted to reduce fatigue. Whenever a patient needs care in bed no arrangement of the environment can completely prevent physical strain if the attendant uses poor body mechanics. In spite of the excellent physical education programs in high schools in recent years parents are still sadly ignorant of good body mechanics. A small part of the home treatment instruction period may very profitably be spent on definite instruction to the mother on the use of her body as she works with the patient.

And finally, in considering home care instructions, no instructor ever had a pupil more eager to learn—and few instructors are permitted to plan a lesson aimed at one individual pupil with materials for demonstration purpose in which the student has such loving interest.

Problems in the Physical Habilitation Program for Cerebral Palsy

Florence A. Liljander, B.S.

Physical therapists can claim to have been among the first to contribute to the habilitation of the cerebral palsied, having been on many hospital staffs and in other health organizations some time before the members of the other specialized professions. When it was realized that cerebral palsy was a problem of such size and complexity that it had to be dealt with separately from other neurological and orthopedic conditions, it was usually the physical therapist who was available to assist in organizing the first clinics. Here he functioned, within the limits of his ability, not only as physical therapist, but in the other team capacities as well. Adults with cerebral palsy and parents who attended these clinics were given the encouragement and the group feeling that made them work for what has resulted in the national program of today — a program that combines the services of many professions to provide for the welfare of all with cerebral palsy.

We have become accustomed to speak of the goal of this program as total habilitation. Literally, habilitation means "to equip for operation," that is, for useful performance. It is understood, of course, that it is not possible to equip every cerebral palsied person for useful performance in every way. The whole group can be divided into those who may be expected to achieve almost total habilitation; those who will achieve partial habilitation; and those who cannot achieve it at all. The last includes those with physical disabilities with which they are unable to cope because of severe mental defect. They must be provided for but they must not be included in an habilitation program which will be of no benefit to them and will only divert care from those who can profit. A second group which appears rather frequently, includes those who simulate defects of the motor apparatus because of severe mental deficiency, and who have been incorrectly diagnosed as cerebral palsied. These belong completely outside of the cerebral palsy program.

The group who may be expected to benefit from an habilitation program is diverse and of complex nature, with a variety of handicaps probably greater than in any other medically classified group. Though today we recognize the needs of this group, so that more and more facilities are being provided, we still are far from knowing the best ways to fulfill these needs. Therefore, an orderly planning of the use of facilities and trained personnel would seem to be necessary in order to make possible and to encourage the development of the various phases of habilitation.

Formerly Coordinator of Therapies and Physical Therapist, St. Giles Home, Garden City, New York; Miss Liljander is in Italy visiting various cerebral palsy centers, including the Instituto Neurologico which she helped to organize in 1950.

Although many training centers throughout the country continue to function as more or less isolated projects, with one or more staff members working alone, rather than as part of a complete team, it is certain that the team approach is becoming more prevalent. A team functions successfully only when the following are true: individual members fill the role for which they have been selected; they work in cooperation with each other; those in authority use the team services effectively. The mere existence of a team means little.

If the tremendous amounts of time, money and effort now being spent are to be justified, they must produce long term benefits so many. To reach this goal it is vitally important that those of us who are concerned with the problem should adopt a professional viewpoint from which to judge plans and procedures on the basis of the results.

Let us consider a cerebral palsy center from the viewpoint of a layman, one who is not professionally devoted to cerebral palsy. The average layman is apt to be impressed by the physical facilities, the handsome building, the modern appointments, the expensive and complicated equipment and the tricky gadgets. He is impressed when he sees a room full of patients and staff, and much activity. He likes to hear that things are going smoothly and that every patient is making progress. He is impressed by the talk of what is being done. Because of his lack of knowledge and experience, he must judge the value and success of an operation by what it *appears* is being accomplished.

But those of us who are professionally involved, and those who are involved to the extent that they are in a position to control or to exert influence on a program have no right to adopt the layman's viewpoint, whether it be from wishful thinking, emotional entanglements, the pressures of daily work, or because it is the easier way.

The physical therapist, then, as one of the major team members, must consider how he can make his greatest contribution. He must know what his major duties are, and what factors affect the quality of service he gives.

The physical therapist's training has prepared him to make one unique contribution to the total effort for which no other team member is equally qualified, and that is, *to equip the cerebral palsied for maximum physical operation.* He may do much good in other ways, since there are physical therapists who excel in parent counselling, who are good psychologists, who have taught children to read, and who have helped in vocational guidance. These diversionary efforts are good and desirable, *provided* that it is kept in mind that such skills are auxiliary and are to be used as aids rather than as substitutes for the work the physical therapist has been trained and employed to do. If a physical therapist's service is to be of unique value, then, it should result in motor progress in his patients which will be of practical use to them or to those who must deal with them.

There are of course certain exceptions to this. Sometimes it is necessary for a patient to have a trial period of training in order to form an eventual diagnosis or to evaluate his potentialities. When no progress results service can still be said to have been good, *provided* that it is not continued beyond this point, and the patient is directed instead to where he can be helped.

Other exceptions are those which occur in every training center when for a time it may be advisable or expedient for the physical therapist to use his special skills to accomplish a particular end with an individual or group. In such exceptions, however, the aims must be clearly understood by all concerned.

There are several factors that affect the quality of service that the physical therapist gives. If we are to judge the results of training fairly and objectively, both from the standpoint of the therapist and from that of the patient, these factors should always be considered. It is only in this way that we can learn the reasons for success or failure and so progress. The most important factors are the following:

I. The *material* with which the physical therapist works, that is, the patient. In order to bring about physical improvement that will be of practical value to the patient or to those who deal with him, it is essential that the patient have the capacity to react favorably to the training he receives. This capacity may be great or small and it depends mainly on the following: a) mental ability, b) degree and duration of physical involvement, and c) the will of the patient to cooperate.

Therefore, it is extremely important that as accurate as possible pretraining evaluation be made on the basis of the above factors. It is not sufficient that the diagnosis be simply cerebral palsy, with subsequent referral to a treatment unit. Although in some cases it is impossible to judge a person's capacity until he has received training, the use of training facilities as a substitute for the preliminary diagnosis is not justified. It is a waste of facilities to continue therapy indefinitely after the trial has established

the fact that gross mental impairment or physical involvement prevents the person from utilizing his motor apparatus.

II. The *facilities* with which the physical therapist must work will directly affect the quality of service he can give. They are the physical ones of *space, equipment,* and, *time.*

Obviously there must be space in which to work, and the more there is and the better it is planned the easier work becomes. Lack of sufficient space may necessitate the exclusion of valuable activities, prohibit the use of necessary equipment, and create undesirable distraction and confusion.

Equipment, too, is necessary and some of it has come to be accepted as basic. Unfortunately, a great amount of costly and complicated equipment has appeared on the market in recent years that has not proved particularly useful in practice and its importance has been overemphasized. Equipment should be chosen by the physical therapist to suit the needs of his particular programs.

The facility that is most necessary, and probably least considered by those who provide the facilities, is *time.* When this is at a minimum there can be no substantial results from treatment. At present, the typical day of a physical therapist seems to be divided into forty-minute periods or less per patient. Yet nowhere is the assembly-line method less likely to succeed than in the treatment of cerebral palsy. The slow physical response and in many cases the slow mental response demands time. The training process itself requires that the patient's performance be slow and unhurried. The observation and study of each individual preliminary to planning a program for him take time. Treatment requires patient effort on the part of both physical therapist and patient. Parental instruction must be given, records must be kept, and regular staff meetings for the coordination of therapies are necessary. In many clinics, student physical therapist training programs are carried on regularly, and when time is limited, either student or patient is deprived of the training he is there to receive. The result can be only that a great number of persons may have been exposed to therapy, but none has received the amount that could bring lasting good effects.

Lack of time, then, can often be one of the chief reasons for lack of progress, and should be considered when either the quality of a physical therapist's service or the progress of a patient is being evaluated.

III. The third factor that affects the quality of service given and the one over which the physical therapist has the greatest control is, *the physical therapist himself.*

Let us assume that he has the training that qualifies him to serve as a team member in his special capacity; that he has the qualities desirable and necessary for working with and influencing other human beings; what then are his most important responsibilities if he is to make the greatest possible contribution to the program?

A. *The therapist must continually be aware of the total cerebral palsy problem,* and consider each patient's whole problem rather than just the physical one with which he is specifically dealing. The therapist can so easily become involved in the daily routine that he ceases to give thought to the other aspects of habilitation. The specialist is always in danger of not being able to see over-all effects and of tending to judge good and bad, and right and wrong, by the sole standard of his own specialty. In doing this, he may either over- or underestimate the importance of treatment to a particular patient. Only by considering the total problem can he put physical therapy in its proper perspective where it may be the major part of the plan for one patient and a secondary part for another. His own plans for each patient's training must depend in part on this.

B. The therapist must at the same time *keep in mind that his special duty is physical habilitation.* He must devote his energies mainly to this, seeing to it that the teaching, on his part, and the practice, on the patient's part are actually done. It is easy for the physical therapist to allow his time to become filled with paper work, constant interruptions, chores and other distractions so that not enough of it is given to the regular instruction and drill on which results depend.

C. The therapist must continually *strive to correct the faults of his program.* It goes without saying that many improvements can be made by an enthusiastic, resourceful and energetic physical therapy staff alone. But it is also necessary to make and to keep administrators and other team members aware of faults and of how their help is needed to correct them. Physical therapists in their close contacts with patients where they must put into practice the theories and recommendations of others, become aware of many problems that the others cannot know. Rarely does the medical director of a unit devote his full time to it as does the physical therapist. Business administrators also are concerned with

so many other facets of the problem that they cannot know what may be vital to the success of a program.

The physical therapist must accept the blame for remaining faults which he has not reported. He is shirking his responsibility if he merely complains to other staff members. Unless, after objectively evaluating their importance, he has logically and clearly brought these faults to the attention of those in authority, he cannot disclaim his failures.

D. The physical therapist *must cooperate with other team members,* recognizing that their parts in the program are as important as his, and that their difficulties are often much the same.

E. The therapist *must increase his knowledge.* The fact is that most of what we are doing today for the physical habilitation of the cerebral palsied is experimental. There is no method that has yet proven successful enough to be used as a standard for treatment. Technics are a mixture and conglomeration of ideas from many sources. Many methods that seem logical in theory have not succeeded in practice. We know many details of training that are good but they do not add up to an integrated whole. If we do not admit that we are still near the bottom of the ladder as far as knowledge of therapy for the cerebral palsied is concerned, we are not facing facts. We must not come to accept our present procedures as sufficient, but must search with care and diligence for facts, principles, and methods that will produce more worthwhile results.

The physical therapist should always be among those who are seeking for answers to the problem, and though there are some who have more scientific minds than others and some who have superior training and experience, each should try.

F. The physical therapist must be ready to *share his knowledge* with all who can profit from it, offering it not only to his co-workers but wherever it may be of help. It is only by the free expression and exchange of ideas that the best can be put to use for the good of the most.

CONCLUSION

Because the treatment of cerebral palsy is still not standardized, the best possible conditions must be created to encourage and to enable team members to contribute material to its advancement.

Physical therapists, because of their specialized training and because of their close contact with the cerebral palsied and their problems, are in a position to be a major influence for good in the cerebral palsy program.

The physical therapist needs the help of others in providing him with workable material and adequate time and physical facilities, if he is to carry out a successful program of physical habilitation. But first and foremost, he must be aware of and live up to his own special responsibilities for its success or failure.

You can set up productive

PHYSICAL THERAPY RECRUITMENT TIE-INS

with your community agencies' activities during February

YWHA Founded February 1902

USO Fourteenth Birthday

Member agencies:
YMCA — YWCA
National Catholic Community Service
National Jewish Welfare Board
Salvation Army

Boy Scout Week (Founded 1910)

Theme: "Building for a Better Tomorrow"

Brotherhood Week

(National Conference of Christians and Jews)

Theme: "One Nation Under God"

Make your contacts and finalize your tie-in plans as early as possible. Get in touch with your Recruitment Chairman for suggestions or write your National Office. Arrange for tie-in publicity with these agencies' newspaper, TV and radio publicity. Plan display tie-ins for your APTA recruitment poster and recruitment literature in windows, in local agencies' exhibits, in libraries, in high schools, in junior colleges and universities.

SCHEDULE YOUR SOUND FILM AND COLOR FILM-STRIP SHOWINGS

Acetic Acid Ionization

A Study to Determine the Absorptive Effects upon Calcified Tendinitis of the Shoulder

Constantine G. Psaki, Ph.C., M.D., and Joseph Carroll, Ed. M., Ph.D.

Statement of the Problem

This study was undertaken to determine the absorptive effects of acetic acid upon calcified tendinitis of the shoulder. Specific data were obtained on the following questions:

1. What is the effect of the acetic acid method of treatment upon joint tenderness?
2. What is the effect of the acetic acid method of treatment upon joint pain?
3. What is the effect of the acetic acid method of treatment upon joint movement?
4. What is the effect of the acetic acid method of treatment upon the skin?
5. Does acetic acid demonstrate the ability to absorb calcific deposits in the subdeltoid and supra-infraspinatus regions of the shoulder?

Definition and Description of Terminology

"Calcified Tendinitis" is a disease entity usually affecting one or both shoulders and is characterized by considerable pain, joint tenderness, restriction of movement in the affected part, stiffness in the affected area, restlessness, and insomnia. The condition involves little radiating pain and usually follows a history of joint sprain.

The *etiology* has been described best by Mercer (1944) who indicated that friction takes place in every shoulder movement and is minimized by the subdeltoid bursa. With advancement in age, these bursae do not perform with the same degree of efficiency, and degenerative changes occur which result in a constant trauma. As the trauma continues, the fibers of the supraspinatus tendon become worn and tendinitis occurs. This condition may effect calcification of the shoulder joint.

The pathology of calcified tendenitis has been studied carefully by Elmslie who reported the absence of any tear in the supraspinatus muscle. He removed material from a calcified area, and found that it was composed of noncrystalline calcerous matter embedded in a mass of inflamatory cells containing foreign body giant cells. In older cases, well formed fibrous tissue was present. Cultures taken at the time of the operation were sterile, and the biochemical examination of the contents indicated the presence of amorphous calcium carbonate and phosphate. This material in the early stages appeared to be of a creamy consistency, but later it assumed the appearance of being calcerated. In some few cases the material appeared to have a yellowish color with a gritty texture.

The source of the calcerous deposits, Mercer believes, is the impairment of the blood supply by preceding tendinitis. The deposit of lime that is found produces a secondary hyperemia which may cause absorption of the deposit and also correct the underlying tendinitis.

The *diagnosis* may be made, following an attack, by the presence of excruciating pain upon palpation, joint tenderness, and loss of shoulder motion. The patient usually feels most comfortable with the humerus in a position of adduction, and frequently presents himself for diagnosis with the affected arm in a sling. Pain may be elicited with any degree of movement, and the patient may complain of the inability to lie in bed without feeling some sort of discomfort. Where there is a long history of such a condition, atrophy and weakness may be noted in the affected muscles. Verification may be made through the use of the X-Ray machine.

Justification of the Study

Among the many causes for loss of utility of the shoulder joint is the condition termed cal-

Constantine G. Psaki, M.D., Chief Physical Medicine and Rehabilitation, Veterans Administration Regional Office, Philadelphia; Joseph Carroll, Ph.D., Assistant Professor, Temple University, Philadelphia.

The statements and conclusions published by the authors are a result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

cified tendinitis. This condition, from a clinical point of view, is a common entity.

The commoness of incidence may range from simple joint tenderness to exquisite pain and loss of joint mobility. Subsequently, through disuse, muscular atrophy and tissue deconditioning are effected. These conditions, in turn, can cause loss of time in employment and consequent loss of economic stability.

Since other types of treatment did not lend themselves too effectively in our particular clinical situation, an attempt was made to apply the negative pole of the galvanic current by Ion-transfer with an acetic acid solution 3 per cent from the standard diluted U.S.P. The results and specific procedure appear elsewhere in this paper.

LIMITATIONS OF THE STUDY

This study was concerned with determining the effectiveness of acetic acid in absorbing calcified tendinitis of the shoulder. It also attempted to determine the effects of this method of treatment upon the skin and upon joint tenderness, joint pain, and joint movement. The study was limited with regard to the following factors:

THE SUBJECTS

Twelve patients who demonstrated the disability, calcified tendinitis, participated in the study. The authors realize that this figure represents a limited number of cases, from a statistical point of view, but feel that it serves to show the direction in which the method of treatment moved.

1. *Sex.* White males were used in the study.
2. *Age.* The chronological age range was from 28 to 55 inclusive. The mean age was 33.5.
3. *Personal History.* A questionnaire was designed and administered to subjects screened for the study. Those who tended toward regularity in daily habits were selected.
4. *Physical Condition.* Each subject was given a complete physical examination to ascertain the possibility of other organic disorders affecting the condition being studied. Those who were free of all other measurable conditions were selected.
5. *Testing Procedures.* The subjects selected for study were tested at the inception of the study and at three-month intervals over a period of one year. The tests were administered in the following areas:
   a. *Tenderness.* Palpation was made the principle method employed here. The subjects' comments regarding the feelings received at palpation were recorded and evaluated as the treatment proceeded.
   b. *Motion.* The goniometer was utilized to measure the range of joint mobility demonstrated by each subject.
   c. *Pain.* The goniometer was used to measure the point where the subject, attempting to move through the areas of normal joint range, first felt pain.
   d. *Skin Condition.* A written description of the subject's skin condition was kept as the treatment proceeded.
   e. *Absorption of Calcium.* This area was measured by the use of x-ray.
6. *Environment of the Study.* The entire study was initiated, conducted, and completed in the Veterans Administration, Regional Office, Physical Medicine and Rehabilitation Clinic, in Philadelphia, Pennsylvania.

METHOD OF TREATMENT EMPLOYED IN THIS STUDY

Application of the negative pole of the galvanic current by Ion-transfer with an acetic acid solution of 3 per cent from the standard diluted acetic acid U.S.P. of 8-10 per cent was made to 12 subjects who were verified by x-ray as having positive cases of calcified tendinitis of the shoulder.

The subject sat on a chair while the affected shoulder was padded with gauze moistened with a 3 per cent solution of acetic acid. A metal electrode was applied to the shoulder, over a small towel, containing the same acetic acid solution. An elastic bandage was used to hold the entire apparatus in position. When it was necessary to treat both shoulders at the same time, a similar procedure was followed, except that a bifurcated wire was attached carrying the negative pole; and the positive pole was attached to another plate on the surface of his back with an infra-red lamp superimposed.

The current was turned to a low milliamperage (to break the skin threshold) and gradually increased to the subject's tolerance. This increase usually ranged between five and ten milliam-

perage and was retained at that level for thirty minutes.

The next step in the procedure was to apply a slow, alternating, surging current (Sine wave) to the muscles of the shoulder girdle including the biceps, triceps, deltoid, and trapezius groups. This application was maintained for a period of five minutes at the subject's tolerance.

When it became evident that the subject was able to raise his arm with some facility, therapeutic exercises were prescribed for all of the muscles of the shoulder girdle.

This entire procedure was pursued by each subject three times per week for a two-week period, then twice per week for four weeks or as long as indicated by x-ray reports.

FINDINGS

Twelve subjects participated in the study. The findings were as follows:

Case Numbers 1 to 6. Diagnosis—Acute Calcified Tendinitis.

Prestudy Tests Results:

1. *Tenderness.* Subjects complained of "severe pain" upon palpation of the shoulder area.
2. *Motion.* Motion was restricted at a point, on the average, 4 inches from the shoulder level.
3. *Pain.* Subjects complained of pain upon raising the affected arm from the side to a point, on the average, of 3 inches.
4. *Skin Condition.* Normal in all cases.
5. *X-ray Findings.* Heavy calcific deposits in either the subdeltoid or supra-infraspinatus regions.

Poststudy Test Results:

1. *Tenderness.* Not evident except in two cases where stony deposits began to break down as shown by the x-ray pictures.
2. *Motion.* Full range of shoulder joint action possible when followed by therapeutic exercises within six weeks.
3. *Pain.* Not evident after the second week of treatments in all cases.
4. *Skin Condition.* Moderate hyperemia which disappeared after three hours.
5. *X-ray Findings.* X-rays taken after a period of three months showed a breaking down of larger stone calcific deposits. Subsequent x-ray pictures revealed complete absorption of calcific deposits in all but two cases.

Case Numbers 7 to 12. Diagnosis—Chronic Calcified Tendinitis.

1. *Tenderness.* Subjects complained of "severe pain" upon palpation of the shoulder area.
2. *Motion.* Motion was restricted at a point, on the average, 8 inches from shoulder level.
3. *Pain.* Subjects complained of pain upon raising the affected arm from the side at a point, on the average, of 8 inches from the shoulder level.
4. *Skin Condition.* Normal in all cases.
5. *X-ray Findings.* Moderate calcific deposits in either the subdeltoid or supra-infraspinatus regions.

Poststudy Test Results:

1. *Tenderness.* Asymptomatic after the second week of treatment.
2. *Motion.* Some limitation of motion in all cases.
3. *Pain.* None after the fourth week of treatment in all but two cases.
4. *Skin Condition.* Moderate hyperemia which disappeared after three hours.
5. *X-ray Findings.* Complete absorption of calcific materials after the fourth month of treatment in three cases, small particles remaining in two cases and the last case unchanged.

CONCLUSIONS

Within the limitations of the present study the following conclusions or generalization may be made.

1. Absorption of calcific material may be effected by hyperemia and local hyperacidity in 40 per cent of the cases.
2. Breakdown of calcific material may be hastened by the utilization of local heat, ionization, and by increasing the acidity level.
3. Symptoms of calcific tendinitis soon disappear when the acetic acid method of treatment is employed.
4. Joint pain and tenderness disappear shortly after using the acetic acid method of treatment.

5. Complete range of joint action may be restored by using the acetic acid method of treatment.
6. The effects of the acetic acid method of treatment upon the skin are temporary and of little consequence.

SUGGESTIONS FOR FURTHER STUDY *

1. A study with a greater number of cases should be attempted to establish more reliable conclusions.
2. An attempt should be made to employ this method of treatment on the other joint areas of the body where a similar condition is evident.

* Since the completion of the above study, subsequent applications of a 5 per cent solution of acetic acid have been found to be more successful in the alleviation of symptoms and the absorption of the calcific deposits.

BIBLIOGRAPHY

1. Best, C. H. and Taylor, N. B.: The Physiological Basis of Medical Practice, Williams and Wilkins Company, Baltimore, 1950.
2. Mercer, W.: Orthopedic Surgery, Williams and Wilkins Company, Baltimore, 1944.
3. Mc Lester, J. S.: Nutrition and Diet in Health and Disease, W. B. Saunders Company, Philadelphia, 1945.
4. Osborne, S. L. and Holmquist, H. J.: Technique of Electrotherapy and its Physical and Physiological Basis, Charles C Thomas Company, Chicago, 1945.

Index to Current Literature

A Community-Based Home Care Program. Anna B. Minkoff, Nursing Outlook, 2:516-518, October 1954.

Nursing in New York City's Home Care Program. Mabel Reid, Nursing Outlook, 2:530-532, October 1954.

Total Rehabilitation of the Cardiac Patient. Louis B. Newman and Lyle A. Baker, Illinois M. J.; 106:189-193, September 1954.

The Emotional Problems of Behavior in the Spastic, Athetoid and Ataxic Type of Cerebral Palsy Child. Peggy Derse, Am. J. Occup. Therap., IV:252-260, November-December 1954.

Rehabilitation of the Patient with Multiple Sclerosis. Morton Marks and Joseph Goodgold, J.A.M.A., 156: 755-757, October 23, 1954.

Practical Mechanical Devices for Use by Disabled Persons. Donald A Colvalt, J.A.M.A., 156: 758-759, October 23, 1954.

Progress in Physical Medicine and Rehabilitation. Walter M. Solomon, J.A.M.A., 156; 753-755, October 1954.

Music as an Adjunct in the Treatment of Brain-Damaged Patients. Beatrice Fields, Am. J. Phys. Med., 32:273-283, October 1954.

The Use of Gamma Globulin in Measles and Poliomyelitis. John E. Allen, Kentucky M.J., 52:764-769, October 1954.

Blood Volume in Health and Disease. Solomon A. Berson, Bull. New York Acad. Med., 30:750-776, October 1954.

The Degenerated Lumbar Disc: Treatment by Vertebral Body Fusion. Ralph B. Cloward, J.Internat.Coll.Surgeons, XXII:375-386, October 1954.

Practical Advice About Handedness. Eugene M. Caffey and W. E. Harris, Virginia M. Monthly, 81:530-533, November 1954.

Bronchial Asthma—Diagnosis and Management. J. Warrick Thomas, Virginia M. Monthly, 81:524-529, November 1954.

Physical Medicine and Rehabilitation for Chronic Illness. Frank H. Krusen, Ohio State M.J., 50:929-934, October 1954.

Civilian Hospitals as Rehabilitation Centers. Ralph E. Worden, Ohio State M.J., 50:935-937, October 1954.

The Clinical Use of Intermittent Positive Pressure Breathing Combined with Nebulization in Chronic Pulmonary Disease. Peter A. Theodos, Dis. of Chest, XXVI:394-407, October 1954.

Editorials

The dissemination of knowledge and the mutual exchange of information, ideas, and problems is of constantly current interest to all groups with mutual objectives and goals. Among the many facets of the APTA's responsibilities to its members, this particular area holds a rightfully high position for emphasis. Throughout the months of the year many devices are constantly employed to serve the needs of members in an attempt to reinforce their basic knowledge of the profession, as well as to assist them in integrating and applying their knowledge toward an optimum result of good patient care.

One of the most effective means of realizing this objective has always been the annual APTA Conference at which opportunities are presented to members with varied interests and widely separated problems to receive help and increased knowledge. To this end it has been a constant desire of those charged with planning conferences to make every effort to utilize the most effective means of presenting programs which would best serve the greatest need. From year to year many different approaches to the manner of presentation have been used with great success, but the search goes on constantly for even better ways to reach the greatest number with an effective result.

As is true for a multitude of situations country-wide, this problem of presentation of material has undergone many changes over the years. It is a problem experienced by many organizations, each of which has tried many ways to arrive at the right answer. We have seen, among all of the varied methods, such things as lectures by leaders in certain fields, lectures and demonstrations, pure demonstrations, seminars on specific subjects, and most recently the "workshop" technic.

In attempting to provide the most benefit to our members this last named device has appeared to have merit and warranted a trial. In this present age hardly any one in a professional field has failed to have experienced this method of teaching at least on a small scale. The success of the workshop technic is very obvious, particularly in view of the general enthusiasm on the part of participants in various ones. It's ability to provide a real learning experience is also clear for there is no doubt that sharing of many experiences between members of a group will bring out far more factual material than absorbing the ideas of only one.

This year the plans for the APTA conference are based on a series of workshops covering a wide variety of interests. This is the first time such a program has been attempted but it appears that it offers many advantages for the benefit of each participant. The very nature of the organization is one which will, first, permit participants to receive a sharing of ideas and technics from a number of individuals as opposed to receiving facts from a few single speakers. On this point it would seem that one fact should be emphasized. Many persons attend formal programs because of specific interests, problems or needs for definite information. Such a presentation, at best, cannot hope to fulfill each of the individual needs of any one audience. In a workshop, on the other hand, there exists an opportunity for every participant to present and receive material pertinent to *his* problems.

Second, the workshop method is ideally suited to consideration of *practical* solutions to problems. The ideal approach is laudable but unfortunately not always applicable to real situations. In the informal discussion, small sessions, and free exchange that are possible in a workshop, there

lies a truly workable means of meeting actual situations. It has been clearly demonstrated that the value of this technic has been quickly appreciated by participants in light of the help each can receive for his particular needs.

Our profession has been noted since its very beginning for being progressive and up to date in all that it has done. In every instance actions have been taken with the single goal in mind of increasing the individual's ability to serve the patient. Here again that is the objective and no member should miss the educational opportunity offered by taking part in the 1955 St. Louis Conference.

Central Council for the Care of Cripples Announces Study Tour

Monday, July 18 - Sunday, July 24, 1955

Members who are contemplating a visit to England this summer may be interested in the following announcement.

The full program, information about fees and application for the Study Tour, which must be returned no later than May 21, 1955, may be secured by writing:

The Secretary
CCCC (Tour 1955)
34, Eccleston Square
London S.W. 1

In preparing the program for the Third Annual Study Tour (1955) the Central Council for the Care of Cripples has endeavored to provide the opportunity for delegates to see practical demonstration of the services which are rendered to paraplegics and sufferers from various rheumatic diseases. These particular aspects of disablement were chosen because much time at the Sixth World Congress of the International Society for the Welfare of Cripples in 1954 was spent in discussion on these subjects. In view of the interest which is at present focussed on cerebral palsy a special day program has been arranged for those who are particularly interested in this condition. There will also be opportunities for viewing the more general aspects of training and employment.

Hitherto, a coach tour through England or Scotland has been arranged, but in 1955 it is proposed to base the tour on London and to organize visits which will give delegates an opportunity of visiting London theatres and places of interest, and of shopping. The evenings will be free, but on Tuesday and Friday special arrangements are being made to afford visitors a chance to see sights which are of interest and beauty. On Tuesday evening, July 19, visitors can go by steamer on the river to the Tower of London to witness one of the most historic ceremonies—"The ceremony of the keys." The steamer will leave Westminster Pier at 8 p. m., and refreshments will be available on board. During the return journey there will be a good view of the floodlighting of the building on the river banks.

On Friday, July 22, after visiting Preston Hall, Maidstone, the coach will proceed to Canterbury, and arrangements will be made to see the Cathedral, the Norman staircase in the King's School grounds, and other places of interest, and later dinner will be served in a hotel at Fordwich, the old port of Canterbury where there is a medieval town hall well worth a visit.

Saturday and Sunday, July 23 and 24, will be devoted to sight seeing and delegates who wish to do so will have the opportunity of attending the Stoke Mandeville games on Saturday afternoon, July, 23. Those who do not wish to go to Stoke Mandeville will be taken to see Sulgrave Manor, birthplace of George Washington, and it is hoped Blenheim Palace, birthplace of Sir Winston Churchill. Those who wish to go to Stoke Mandeville should indicate this on their application form so that the necessary tickets may be obtained.

On Sunday, July 24, it is hoped to arrange for a motor tour through many beauty spots of Sussex, and to include a visit to Arundel Castle, the home of the Duke and Duchess of Norfolk.

So Well Remembered

The National Office was showered with holiday greeting cards everytime the postman came. They came from every part of the world and with dozens of U.S.A. postmarks. To our many members who remembered us, and particularly those who wrote heartening messages of support and commendation, we express our collective thanks and pledge to increase our efforts in 1955. Happy New Year to all.

Association Activities

National Committees Meet

January 1955 turned out to be APTA Committee month and may well set a precedent for top level planning in our organization. Following the establishment by our Board of Directors of various committees to supply the growing needs of our members and chapters, week-end meetings in the National Office were scheduled. Elected officers and appointed committee members all have full-time jobs so that week ends are the most convenient time for using this volunteer service.

Steering Committee

This is composed of three Board members appointed by the President to consider interim business, consult with the Executive Director and make recommendations to the Board. Mary Nesbitt, E. Jane Carlin and Mary Clyde Singleton met with Mildred Elson and Mary Haskell January 7–9. Items on the agenda concerned the Second World Congress, Association budget, advisory and other committee responsibilities and procedures, trained physical therapists and a review of all membership requirements, and organizational structure.

Chapter Advisory Committee

The committee members came from Oregon, Colorado, Kentucky, New York, and Connecticut to plan ways to furnish more help to chapters. They met January 13–15 and discussed standards for chapter procedures, a chapter manual, a chapter workshop at conference, recruitment, and problems submitted by various chapters.

World Congress Planning Committee

The Second World Congress for Physical Therapy is rapidly approaching and the committee held its third meeting January 16 and 17 to expand on the plans discussed earlier.

Hospital Institute Committee

The success of our first Institute held in Chicago in cooperation with the American Hospital Association demanded a continuation of this service to members. The initial meeting of a committee from the Eastern Pennsylvania District was held on January 16 in Philadelphia where the next Institute will be held in November. Representatives from the AHA and APTA were present.

Editorial Board—Physical Therapy Review

The Editorial Board with three new members met January 21–22 to orient new members, discuss standard operating procedures and plans to continue the expansion of the *Review* and better serve the interests of its readers.

Committee on Examinations

The four members of this committee met January 23–24 with Dorothy Hewitt and representatives of the Professional Examination Service to consider revision of the state licensing examination following its use by over one hundred candidates. They also studied the analysis of results of the examination for membership for foreign trained physical therapists given to one hundred graduating students in five AMA approved schools and established the passing grade for foreign trained applicants.

Judicial Committee

This newly created standing committee held its organizational meeting January 27–29. It made a thorough study of the bylaw revision on Ethics and Discipline, consulted with our legal counsel, set up committee procedures and planned guidance and interpretation regarding chapter and membership obligations for maintaining professional ethics and discipline.

Advisory Committee to the Department of Professional Services

Since January hath but 31 this committee is meeting February 3–5 to implement recommendations made at earlier meetings regarding increased professional services to members by way of printed material.

Committee on Self-Employed

This Committee will meet in San Francisco some time during February to begin its duties as outlined by the Board of Directors.

Correction

In listing the names of the Committee on Self-Employed in the January Review, the fourth member of the Committee should have been as follows: Florence Kendall, Baltimore, Maryland.

Institute on Kinesiology for Instructors

The American Physical Therapy Association is sponsoring an Institute on *Principles of Basic Sciences*, especially physics, as they relate to kinesiology. Methods of teaching kinesiology also will be presented.

Admission requirements

Priority for admission will be given to instructors of the subject and those interested in teaching. Enrollment will be limited to 50.

Tuition — $60.00.

Place — Iowa Continuation Center, State University of Iowa, Iowa City.

Time — April 12-16, 1955.

Applications should be filed *immediately* in the National Office, American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

Arrangements will be made at the Iowa Continuation Center for housing and meals at minimum cost.

National Foundation Scholarships in the Field of Physical Therapy

A limited number of scholarships are available to students who need financial assistance to complete their education in physical therapy.

METHOD OF ADMINISTRATION

Application should be made directly to the National Foundation. For all students whose course of study begins in the fall, the completed application form must be received by May 1 of the year the student will begin either

(a) his Junior *or* Senior year in physical therapy curriculum, or

(b) his program in the certificate course.

Since in a few schools the course in physical therapy begins in January, February or June, special dates for filing applications for students attending these schools are necessary. (See below.)

Dates for Filing Application Forms:

For classes *beginning* in	MUST BE RECEIVED BY	Committee meets approximately
Sept. or Oct.	May 1	July 1
Jan. or Feb.	September 15	November 1
June	March 1	April 15

Deadlines specified above will be strictly observed.

Selection of candidates will be made on a competitive basis by the Scholarship Committee composed of appointed members of the American Physical Therapy Association. Preliminary training, experience, scholastic record, and financial need, as well as personal and professional qualifications, will be considered. The National Foundation will accept the Committee's decisions as final.

FINANCIAL BENEFITS

Students will be asked to clarify their financial needs, and those who can pay for any part of their education will be expected to do so. Because of the intensiveness of the course of study, scholarship students may not engage in part-time employment. The following assistance may be requested if the student has no other means of completing his education:

1. Tuition for the period necessary to complete physical therapy education after the student has completed 60 semester hours (90 quarter hours) of satisfactory college work. Scholarships will not be given for a portion of the Junior year.
2. Tuition and maintenance for the period necessary to complete physical therapy education after the completion of 90 semester hours (135 quarter hours). Scholarships will not be given for a portion of the Senior year or of the certificate course.

No fees will be paid. No allowance will be made for the support of dependents. Partial scholarships are available to supplement G.I. educational benefits.

ELIGIBILITY REQUIREMENTS

1. Candidates for the baccalaureate degree will be eligible for a tuition scholarship upon completion of 60 semester hours of satisfac-

tory work at a college or university accredited by a national or regional accrediting association. The candidate must present evidence that:

(a) during the balance of his program, he will be enrolled in the physical therapy curriculum of an approved school.

(b) the science requirement will be fulfilled by the time he has completed 90 semester hours of study.

2. Students who have completed 90 semester hours of education at a college or university accredited by a national or regional accrediting association will be eligible for a scholarship providing for *both* tuition and maintenance.

   It is recommended that all applicants without the baccalaureate degree be candidates for the degree.

3. The curriculum must have included the following credits in science courses in which the student shall have received a grade of C or better:

   (a) 15 semester hours (22 quarter hours) in biological *and* physical sciences. Only courses including laboratory work with active student participation will be acceptable.

   (b) 12 semester hours (18 quarter hours) of social sciences of which at least 6 must be in psychology.

4. Acceptance for the curriculum in physical therapy by a school approved by the Council on Medical Education and Hospitals of the American Medical Association.
5. United States citizenship. Those who have made application for citizenship will be considered.
6. Sound health as attested by medical history and recent physical examination.
7. Applicants must not have passed their thirty-sixth birthday.

OBLIGATION

Scholarship recipients must agree to accept employment under the supervision of a qualified and experienced physical therapist in the United States or its territories for a year immediately following completion of the physical therapy course. There is no obligation to work exclusively with infantile paralysis cases. The physical therapy director of the school, in cooperation with the American Physical Therapy Association, will assist the student in obtaining supervised employment. The National Foundation has no placement service and is not responsible for placing students in positions after graduation.

GENERAL INFORMATION

1. The candidate should apply directly to the school of his choice and should request the school to notify the National Foundation when he has been accepted for the course. Acceptance by an approved school does not guarantee a scholarship.
2. Credentials must be complete and the candidate must have been accepted by an approved school before his application can be submitted to the Committee. Students who have applied for entrance to an approved school may file application for scholarship pending acceptance by the school.
3. Scholarship assistance will be continued only for students who give evidence of serious and undivided interest in physical therapy as a profession and whose work is otherwise satisfactory. A C-plus average must be maintained during the physical therapy course. Reports will be obtained at regular intervals from the school, and an unfavorable report may result in cancellation of the scholarship.

Application forms may be obtained from:

Division of Professional Education, The National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y.

Fellowships

The National Foundation for Infantile Paralysis offers a limited number of fellowships in the field of physical therapy teaching. These fellowships, which may be approved for one to three years, are made available to help prepare properly qualified candidates as instructors and administrators in physical therapy schools.

Applicants for fellowships must be U.S. citizens (or applicants for citizenship) and must be in sound health. Eligibility requirements also include: a baccalaureate degree; membership in the American Physical Therapy Association; and significant satisfactory general experience as a physical therapist, preferably for three years or more. The experience requirement may be reduced for well qualified candidates who are nominated by the physical therapy school for a program of at least two years of study.

The program of study should be developed by the applicant with the Physical Therapy Director of an approved school of physical therapy which offers a graduate study program in physical therapy and subjects related to the physical therapy curriculum.

The program should be arranged so that there is a balance between the time devoted to the academic program, clinical subjects, and clinical

experience. Supervised practice teaching in the physical therapy school is also required.

1. *The Academic Program* should include further preparation in at least one of the basic sciences required in the physical therapy curriculum, administration, and a minimum of one course in educational methods, unless the candidate has had more than average preparation in these areas.

   The study of educational methods should be undertaken prior to practice teaching. Applicants are requested to outline briefly the content of courses in educational methods.
2. *Clinical Subjects and Experience* should be considered when working out the program of study. It is recognized that some candidates will be in need of additional study and/or experience in specified areas which may have to be obtained in the basic physical therapy course.
3. *Practice Teaching* in both the academic and the clinical aspects of physical therapy must be done under the direct supervision of the instructors of the physical therapy school, either at the school or in affiliated institutions. This activity should be incorporated into the program of study and the knowledge gained applied to actual teaching situations.

Counseling is available upon request (to the American Physical Therapy Association's national office) to assist the candidate in working out a program of study.

Selection of candidates is made on a competitive basis by the National Foundation's Clinical Fellowship Committee.

Financial benefits are based on the individual need of each applicant and may include: (1) tuition; (2) books; (3) travel expenditures incidental to the program; (4) maintenance.

Application for these awards may be made to the National Foundation at any time during the year. However, applications to be considered in May must be received by March 1; for consideration in November, applications must be received by September 1; and to be considered in February, applications must be filed by December 1.

Travelships for Physical Therapists

The National Foundation for Infantile Paralysis announces the availability of a limited number of travelships for physical therapists who wish to observe and study examples of administrative, teaching, or clinical service in physical therapy in the United States or abroad.

The purpose of this program is to provide an opportunity for experienced physical therapists to further their knowledge of the developments in the field of physical therapy by personal observation and to permit an exchange of ideas among physical therapists.

Eligibility requirements include: graduation from an approved school of physical therapy; membership in the American Physical Therapy Association and/or registration by the American Registry of Physical Therapists; and a minimum of three years of experience as a physical therapist in a clinical, administrative, or teaching position. Only U. S. citizens (or those who have applied for citizenship) in sound health are eligible.

The applicant must propose a program of travel appropriate to his individual situation and will be asked to estimate his financial need for maintenance and transportation. In no case will an award exceed $2,500. The candidate must make his own arrangements with the institutions he plans to visit.

The Clinical Fellowship Committee of the National Foundation reviews each candidate's qualifications as well as his proposed program individually, and selection of candidates is made on a competitive basis by the Committee.

For further information and application forms address: The National Foundation for Infantile Paralysis, Division of Professional Education, 120 Broadway, New York 5, N. Y.

National Foundation for Infantile Paralysis Grant Renewed

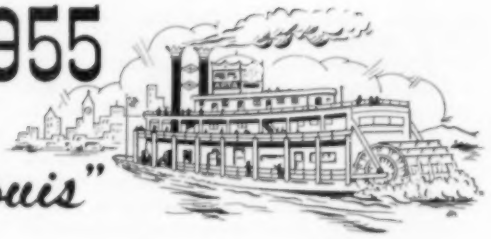
A grant in the amount of $38,728.00 has been awarded to the Association by the National Foundation for Infantile Paralysis to continue polio assignment, placement, and consultation services in the division of Professional Services under the direction of Lucy Blair. These services specifically to the polio patient were started by the Association at the request of the National Foundation in 1949. They have served however to improve services to all patients as new departments have been started, old ones expanded and improved to meet community needs.

It has been the Association's pleasure and privilege to work with the National Foundation these past six years to provide more complete physical therapy services for the polio patient wherever he may be in the United States and its territories.

CONFERENCE 1955

JUNE 19th to 25th

"Meet me in St. Louis"



Meet Me In St. Louis

"Stee-eee-eeamboat a'comin' " — the cry that once sent St. Louisans hurrying to the levee to greet their friends — may not herald your arrival for Conference, but you will have no cause to forget that the Port of St. Louis has a past and a tradition born of the Mississippi.

In February of 1964, 200 years of water will have poured southward past the city which began as a trading-post suburb of New Orleans. Because the leader of the 30 Frenchmen who landed their clumsy pirogues on the west bank of the river was a 13 year old boy, Auguste Chouteau, St. Louis had a unique beginning among American cities.

Your host-city in '55 is the largest on the Mississippi. It has changed considerably since its French inception, but whether you are interested in the remarkable past or the very modern present, St. Louis itself offers you cause to come early and stay on after Conference.

Not far from Conference headquarters is the famous Old Courthouse, scene of the Dred Scott trial. At its east door the slave auction block still stands. This landmark on Memorial Plaza, overlooking the river, is also the beginning of the Daniel Boone trail. Within its walls you'll find fascinating miniature dioramas of the history, exploration, and settlement of this region; documents and maps dealing with the Louisiana Purchase and that 24 hours in 1804 when the Spanish flag was lowered, the French flag again floated high over Saint Louis' city, and then the alien Stars and Stripes was run up; mementos of the Lewis and Clark expedition which started from St. Louis.

Only a few yards from the courthouse stands the beautiful Cathedral of Saint Louis of France, commonly called the Old Cathedral, whose altar fittings are gifts from Louis XV. Its plot of land is the only one in old St. Louis that has never changed hands.

Looking upriver from the cathedral past the oldest house in the city, you may see berthed together the last of the Mississippi showboats and the air-conditioned excursion steamer Admiral. While the Admiral cruises afternoons and evenings, Captain Menke's Goldenrod Showboat never slips her moorings now, but the "meller-drammers" presented every night do not lack for audiences. Monte Blue, Ted Mack, and Red Skelton are veterans of this floating playhouse.

Don't be surprised to hear Dixieland Jazz from the levee on a night in June. A moored barge provides the space for lovers of this rhythm when one of the several good bands gets "hot." Remember that this is the river town where Frankie shot Johnnie and W. C. Handy "dreamed up the bluest of all blues."

More disciplined is the music offered at the Municipal Opera in Forest Park. "Oklahoma," "Kiss Me, Kate," "The Great Waltz," or "Show Boat" played under the stars on the largest stage in the world to an audience of 12,000 people is something only St. Louis can add to your memories.

The 1,400 acres of Forest Park hold much more than the "Muny Opera" which a million people attend during its ten-week season. Almost as many people are convinced that the greatest show in town is the sparkling chimpanzee act that the St. Louis Zoo provides. There is no admission charge to see Nero and Pancho, the famous TV and movie stars. High on a hill, familiar to local lovers, is the Art Museum. Its collection of Chinese bronzes, ceramics, and paintings is especially interesting. A stroll downhill and toward the north leads to Jefferson Memorial which houses "Slim's" trophies. Only Lindbergh's "Spirit of St. Louis" is absent. Depending on your mood, you can golf, canoe, ride, play tennis, or take a spin in a surrey complete with fringe on top in the second largest public park in the United States.

There are many other delightful spots within the city and county which offer a variety of interests and amusements. There are excellent

shopping facilities within walking distance of the Jefferson and, west of headquarters, there is an "antique row" which is exciting territory to collectors. Come in June to see old and new St. Louis.

Do It Yourself in '55

Did you know that the success of the 1955 Conference program is up to you? Those of you who have come year after year have said, "this was the best one ever." But did you stop to ask why it was the best one ever? The speakers have been tops, the chapter hospitality has been unsurpassed, but we have more than a sneaking suspicion that the stimulation you received would have been less without the informal exchange of ideas with colleagues during nonscheduled hours. In fact, we are convinced that this is what really keeps you coming to conferences. Who knows "how to" better than ourselves and what is the best way to get something done? That is why your Conference Program Committee has planned a "do it yourself" conference. We've all felt the pride of creation—a sweater, a cake, a lawn, or even a house; professionally—a self-help device, a labor saving gadget, a case report, a new technic, and so on. Beyond this is the greater thrill of giving away your recipe or demonstrating your new technic. So we're trying to go right down the line with all the other "do it yourself" promoters because we know you'll love it.

Item: You had the chance to vote in chapter meeting as to what workshop topic fitted your greatest interest. The program committee will schedule the ones you voted for.

Item: Some of you are to be selected as group leaders.

Item: All of you will choose your workshop and will "speak up in the meeting." You will give and you will receive—new ways to treat patients, new thoughts on administration, new tests and new devices.

Item: You will come to St. Louis.

Someone says "workshops are a flop." Someone says "I don't know how." We've got the answer and you've got the answer.

One whole afternoon will be spent in showing you how. A workshop on workshops with experienced guides from the great community and university resources in St. Louis. That's our answer.

Three half-days to talk about your biggest problems and your greatest successes. That's your answer.

CATHEDRAL OF SAINT LOUIS OF FRANCE
On this site in 1764 the French settlers attended their first Mass.

Details? You'll get those in March in the *Review* and on your conference registration card —and that's not all, there'll be other meetings for those with similar employment interests, the House of Delegates will be in session, the banquet will be a highlight, chapter officers will get together, and we'll open with a big name speaker.

You'll all be playing a part in our St. Louis Showboat.

Calling You
for Abstracts of Papers
to be presented at your
Research and Clinical Studies Section
1955 APTA Conference
to be held in St. Louis, Mo.

Abstracts due April 15, 1955

Check with your local Chapter or the nearest P.T. School for details

School Section Tentative Program
Jefferson Hotel, St. Louis, Missouri

9:00– 9:30	Registration
9:30–10:30	Keynote Speaker
10:30–10:45	Intermission
10:45–12:30	Workshops 1. Administration and Staff Relations 2. Kinesiology and Applied Anatomy
12:30– 2:00	Luncheon
2:00– 3:45	Workshops Continuation of morning session
3:45– 4:00	Intermission
4:00– 5:00	Business Meeting

The School Section officers appreciate the response to the communication sent out in November to people who attended the School Section in June, 1954. As a result of this cooperation, they hope to be able to present a program that will be of genuine value and interest to all members of the School Section. Meetings of the Section are open to all APTA members interested in education.

Marriages

Margaret E. Borth of Eloise, Mich., to W. Glenn Houts, Dearborn, Mich.

Catherine Copponex of Middleport, N. Y., now Mrs. Catherine C. Park, Middleport.

Jeanne Gebert of Detroit, Mich., now Mrs. Jeanne G. Jacob, Hazel Park, Mich.

Miriam B. Killam of Tacoma, Wash., to Ralph P. Carlsen, Tacoma.

Lorraine T. Leroux of Ft. Geo. Meade, Md. to John T. Snodgrass, San Francisco, Calif.

Pauline Potts of Camp Gordon, Ga., now Mrs. Pauline P. East, Berkley, Calif.

Betty Riviers of Detroit, Mich., now Mrs. Betty R. Saba, Stockton, Calif.

Edward Arnold Snapp, Jr. of Houston, Texas, to Joan Semaan, Houston.

Corrine Wulkan of Minneapolis, Minn., now Mrs. Corrine W. Larson, Minneapolis.

Myrna Zeal of Los Angeles, Calif. to Irwin B. Berch, Los Angeles.

Chapter News

California

CONVENTION NOTICE

Calling all California members! Come one, come all to beautiful San Diego! This is our annual state meeting, and the San Diego Chapter hopes to see all of you on March 19, 1955, at the U. S. Grant Hotel. The morning program will be a symposium of "Back Injuries," and the afternoon will be devoted to related workshops.

There is fun on the agenda also—a gala luncheon with a big surprise, and much to choose from for evening entertainment. You can visit old Mexico and enjoy the fascinating game of jai alai; see the sensational tides from the luxury of the Marine Room; explore San Diego; and/or visit and relax with old and new friends.

If your reservation is not yet in, hurry! Send your hotel reservation card, or write to the U. S. Grant Hotel, San Diego, by March 14, 1955. Registration fees should be sent to Ann Janett, 205 Laurel Street, San Diego 1, California by March 14, 1955.

Remember, we want to see *You* in San Diego!

Greater New York District

The Newsletter staff plans to publicize interesting Inservice Training programs carried on in District Hospitals.

Washington

The January meeting of the Chapter was held on a Saturday afternoon and included a lecture, a demonstration, a business meeting, and four group discussions covering the professional problems involved in the following: Self-employed and Doctors' Clinics, Government, Crippled Children, Other Hospitals.

The Washington Chapter is a member of the State Health Council and is represented on its Executive Committee by Carolyn Bowen. Some of the activities include recruitment of paramedical personnel; study of a requirement for teacher certification of physical therapists employed in special day school classes for handicapped children; health legislation.

New Student Members

Bouvé-Boston

Joan Bissonnette	Nancy Mercer
Caryl Dautch	Virginia Mutty
Carol Grinwis	Frances Russell
Jane Lamb	Barbara Wilson

Childrens Hospital

Barbara L. Anderson	Donald Perry
Lorna C. Anderson	Marjorie Runser
Alexander Andros, Jr.	Burton Smith
Eileen Carlin	Charles Tronson
Merrill E. Kirkland	Mary A. Turner
Frances Maloney	Betty Yaki
Yae Miyahata	Marilyn R. Zuckerman

Grady Vaughn School

Ivan Allred
Barbara L. Carr
Louise Drobil
Edwin Fulkerson
M. Gayle Glidewell
Thomas Goff
Doris Johnson
Sara S. Kelly
Betty J. Lee
Jessie Lyons
George McCluskey
Dell C. Nelms
Vivian Price
Arlene Renken
Robert W. Zwikelmaien

Medical College of Virginia

Jimmy B. Abernathy
George M. Arnold
Nancy Arnold
Otho W. Bell
James J. Brislin
Leon Brooks
Dorothy A. Burk
Ann R. Burnet
Persephone Chiringas
Gwendolyn Clark
Curtis A. Clay
Kathleen K. Dixon
Carolyn Dobbins
Alf O. Ekman
Owen M. Forsyth
Gerald Frampton
Hubert R. Galford
Ruth C. Gray
Ruth Hahne
Frank Harger
Elisabeth Heckel
Edwin B. Hill
Jane B. Holleman
E. Jane C. James
Altamese R. Johnson
Harry W. Kirk
Sidney Krukin
Judith M. Kurtz
Lilah Laughlin
Richard Lee
Virginia Lee
Iris Lorch
Margaret Ann McIntosh
Mary M. Neate
Dominic Paglialunga
Sharon Potash
Rose Mary Powers
Patricia Ralston
Shirley Rocha
Betty Jean Smith
Marialice Smith
Zella Anne Smith
Chester H. Spittle
James E. Stephens
Edward Totten
Margaret B. Vildzius
Donna H. Warren
Elliott Weinberg
Herman L. West
Rosemarie S. White

New York University

Arnold Allenius
Ada Broxton
John Burak
Ronald Coleman
Virginia Consiglio
John Erback
Deborah Frank
Benjamin Gordon
Joseph Jurich
Joseph Kriteman
Emma Miller
Albert Nadler
Teddy Ramirez
John Sadowski
Joseph Sotelo
John Starr
Gerald Stern
Egberto Zayas

Stanford University

Marion Wakeman

University of Southern California

Dorothea Marie Breding
Zephia Fay Holyoak
Barbara Louise Jones
Ned R. Kennedy, Jr.
Elwood L. Kenworthy
Robert Kerr
Robert Blain Loyd
Dixie Martiel
Merle Janice Nelson
Virginia Lee Orton
Patricia Pechtl
Donna Robinson
Helga Unkeless
Jo Ann Schmidt
Inge Viik
Rober Jay Wagner
Joe Walter
Marjorie Wells
Ruth Yeager

Washington University

Mona Gaines

General News

Dr. Hugh Leavell, President-Elect Of the National Health Council

Hugh Rodman Leavell, M.D., Dr.P.H., has been chosen president-elect of the National Health Council, made up of nearly fifty national health organizations, by its Board of Directors. Dr. Leavell takes the place of T. Duckett Jones, M.D., whose death occurred November 22, and he will therefore succeed to the presidency at the council's annual meeting next March.

Dr. Leavell has been professor and head of the Department of Public Health Practice of the Harvard School of Public Health in Boston since 1946. Prior to that he was assistant director of the Division for Medical Sciences of the Rockefeller Foundation.

He is a member of the Medical Services Committee, Commission on Organization of the Executive Branch of the Government (Hoover Commission), and also served with the earlier Hoover Commission in 1948-49. Dr. Leavell has carried out a number of international assignments. He toured medical and public health institutions in Mexico, Central and South America under the auspices of the Institute of Inter-American Affairs of the U. S. Department of State in 1953, and that year also served in Geneva as chairman of the World Health Organization Expert Committee on Public Health Administration. In 1944-45 he was with the United Nations Relief and Rehabilitation Administration as deputy director of health in the European Regional Office.

Dr. Leavell's many organization activities include a presidency of the American Public Health Association, recently concluded.

Nine Million Children To Receive Polio Vaccine

If the Salk polio vaccine, field tested last spring and now being evaluated, proves to offer effective protection against polio paralysis, the March of Dimes will supply it without charge for vaccine next spring for approximately 7,750,000 children enrolled in the first and second grades of public, parochial and private schools in the United States, Hawaii, and Alaska as well as to about 1,390,000 "Polio Pioneers" who did not receive vaccine in the trials.

The new distribution plan, which includes children in the second grade, has just been announced by the National Foundation for Infantile Paralysis. This makes approximately 9,000,000 U. S. school children, in age brackets highly susceptible to polio, eligible to receive the March of Dimes vaccine, if licensed, before the 1955 polio season.

"Polio Pioneers" are the 1,830,000 U.S. school children in 217 test areas in 44 states who participated in the 1954 Polio Vaccine Field Trials, sponsored by the National Foundation and paid for with $7,500,000 of March of Dimes funds. About 440,000 of the "Polio Pioneers" received vaccine last spring; the others did not.

The vaccine field trial offered a heartening lesson in community cooperation in the interest of community health. At least 14,000 school administrators and 50,000 classroom teachers cooperated in staging the 1954 field trials, the largest medical experiment of its kind ever conducted.

This year the March of Dimes must do a bigger job than ever before. It must raise $64,000,000 because $9,000,000 is needed to keep vaccine production lines going, $2,700,000 is needed for scientific research, $2,900,000 for professional education, and at least $29,900,000 for patient aid, including hospitalization. The March of Dimes has expended $203,600,000 in patient aid since 1938.

For science and humanity, give generously to the 1955 March of Dimes in January. The March of Dimes fights wisely, economically and effectively against the polio threat.

United Cerebral Palsy Holds Annual Convention

Cooperation between voluntary health agencies such as United Cerebral Palsy and governmental agencies was one of the important themes discussed at the UCP fifth annual convention, held in Washington, D.C., November 19 to 21.

Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, discussed the question from the point of view of the Federal Government; U. S. Senator Edward J. Thye of Minnesota, talked about the cooperation of voluntary health agencies with Congress and Robert I. Rogin, of New York City, UCP Vice-President in charge of legislative matters, summarized the legislative program of United Cerebral Palsy.

In addition, Dr. Arthur Lesser, Director of the Division of Health Services of the Children's Bureau, U. S. Department of Health, Education and Welfare, addressed the convention.

Another important topic of discussion was the cooperative relationship among the various voluntary agencies. Among representatives of other agencies addressing the Convention were Lawrence J. Linck, of Chicago, Executive Director of the National Society for Crippled Children and Adults, and Philip E. Ryan, of New York City, Executive Director of the National Health Council.

The convention was held at the Hotel Mayflower, with representatives attending from the 48 states and the District of Columbia.

American Public Health Association Annual Meeting

The 82nd annual meeting of the American Public Health Association and 38 related organizations drew 3,500 public health workers to Buffalo October 11 to 15.

Dr. Reginald M. Atwater, executive secretary of the Association, called the meeting "one of the most significant in our history because of the emphasis on program evaluation, which means that thousands of specialists are now back on the job, in governmental and private agencies, with new perspective as to the practicalities of their day-to-day activities."

Topics of special interest were smoking and lung cancer, the combatting of infectious hepatitis and other epidemic diseases, newly discovered respiratory viruses, and developments in such health areas as air pollution, childhood accident prevention, and food sanitation.

An innovation was a two-session symposium, open to all delegates, which considered from many points of view the impact of suburbanization on public health.

The president of the Association for 1954-55 is Dr. Herman E. Hilleboe, New York State commissioner of health, and the president-elect, Dr. Ira V. Hiscock, professor and head of the department of preventive medicine, Yale University.

The 83rd annual meeting will be held in Kansas City, Missouri, November 14 to 18, 1955.

Physical Therapy Programs—1955

APPROVED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS
OF THE AMERICAN MEDICAL ASSOCIATION

DEGREE and CERTIFICATE PROGRAMS—Information on specific entrance requirements should be obtained from the schools listed below. Schools offering a degree will accept high school graduates for the four year program leading to a baccalaureate degree, *as well as transfer students.* A certificate program is a concentrated course of study offered to those who have completed all or most of their undergraduate work before declaring a major in physical therapy. Graduates of either the degree or certificate programs are equally qualified.

	Degree Program	*Certificate Program*
California		
School of Physical Therapy Childrens Hospital Society (Univ. of California at Los Angeles) 4614 Sunset Boulevard Los Angeles 27	†	†
School of Physical Therapy College of Medical Evangelists White Memorial Hospital Boyle and Michigan Avenues Los Angeles 33	†	†
Department of Physical Therapy University of Southern California University Park Los Angeles 7	†	†
Curriculum in Physical Therapy School of Medicine University of California 3rd and Parnassus San Francisco 22	†	†
Division of Physical Therapy Stanford University Stanford	†	†
Colorado		
School of Physical Therapy School of Medicine University of Colorado 4200 East 9th Avenue Denver 7	†	†
Connecticut		
School of Physical Therapy University of Connecticut Box U 101 Storrs	†	
Illinois		
Course in Physical Therapy Northwestern University Medical School 303 East Chicago Avenue Chicago 11	†	†
Iowa		
Department of Physical Therapy State University of Iowa University Hospitals Iowa City		†
Kansas		
Section of Physical Therapy University of Kansas Medical Center 39th and Rainbow Boulevard Kansas City 3	†	†
Louisiana		
School of Physical Therapy Charity Hospital of Louisiana 1532 Tulane Avenue New Orleans 12		†
Massachusetts		
Department of Physical Therapy Boston University Sargent College of Physical Education 6 Everett Street Cambridge 38	†	†
*Course in Physical Therapy Bouve-Boston School Tufts College Medford 55	†	
*Program in Physical Therapy Simmons College The Fenway Boston	†	†
Michigan		
Curriculum in Physical Therapy University of Michigan 1313 East Ann Street Ann Arbor	†	†

*Accepts women students only.

	Degree Program	Certificate Program
Minnesota		
School of Physical Therapy Mayo Clinic 102-110 Second Avenue, S.W. Rochester		†
Course in Physical Therapy 860 Mayo Memorial University of Minnesota Minneapolis 14	†	
Missouri		
Division of Health and Hospital Services St. Louis University 1325 South Grand Boulevard St. Louis 4	†	
Department of Physical Therapy School of Medicine Washington University 660 South Kingshighway St. Louis 10	†	
New York		
*School of Physical Therapy Albany Hospital (Russell Sage College) New Scotland Avenue Albany 8	†	
Courses for Physical Therapists Columbia University College of Physicians and Surgeons 630 West 168th Street New York 32	†	†
Physical Therapy Division School of Education, New York University Washington Square East New York 3	†	†
Program in Physical Therapy University of Buffalo 2183 Main Street Buffalo 14	†	†
North Carolina		
Physical Therapy Course School of Medicine Duke University Durham		†
Ohio		
Course in Physical Therapy Frank E. Bunts Ed. Inst. Cleveland Clinic Hospital 2020 East 93rd Street Cleveland 6		†
Pennsylvania		
Division of Physical Therapy School of Auxiliary Medical Services University of Pennsylvania 1818 Lombard Street Philadelphia 46	†	†
Division of Physical Therapy The D. T. Watson School of Physiatrics (In affiliation with the University of Pittsburgh) Sunny Hill Leetsdale	†	†
Puerto Rico		
School of Physical and Occupational Therapy Commonwealth of Puerto Rico State Insurance Fund San Juan, P.R.		†
Texas		
Grady Vaughn School of Physical Therapy Baylor University University Hospital Dallas	†	†
Hermann School of Physical Therapy Hermann Hospital 1203 Ross Sterling Avenue Houston 5		†
Division of Physical Therapy University of Texas School of Medicine Galveston	†	†
Virginia		
School of Physical Therapy Baruch Center of Physical Medicine and Rehabilitation Medical College of Virginia 1203 East Broad Street Richmond 19	†	†
Wisconsin		
Course in Physical Therapy Medical School, University of Wisconsin Madison 6	†	†
U. S. Army Medical Service		
*Physical Therapy Course Medical Field Service School Brooke Army Medical Center, Fort Sam Houston, Texas and Brooke, Letterman and Walter Reed Army Hospitals Write to: The Surgeon General Department of the Army Washington 25, D. C. Att: Personnel Division		†

*Accepts women students only.

Please direct all inquiries regarding tuition, entrance requirements and other specific information to the school and *not* to the American Physical Therapy Association.

Abstracts

Migraine and Tension Headaches. A Clinical Study of Two Thousand Cases.

Arnold P. Friedman, Theodore J. von Storch and H. Houston Merritt; NEUROLOGY, 4:773-787, October 1954.

Two thousand patients suffering from migraine and tension headaches were studied during the past seven years. Migraine represents a definite clinical entity and may be defined as that form of headache which is characteristically paroxysmal, periodic, unilateral and throbbing. There is frequently a family history of such headaches. The headache itself is usually preceded by aura and is associated with a wide degree of bodily disturbances. Physiologic factors involved include a vasoconstriction of the branches of the internal carotid artery in the prodromal period with sustained vasodilation in the distribution of the external carotid causing the pain of the actual headache. Psychological factors involved are multiple. The treatment of migraine headache is a complex, individualized procedure but prevention of an attack is best accomplished by psychotherapy.

Tension headache is one which occurs in relation to constant or periodic emotional conflicts concerning which the patients are only partially aware. They have no prodroma and are usually bilateral. They may be accompanied by anxiety, nausea, and vomiting. The majority of sufferers are females. The mechanism of these headaches may be either a stimulation of the autonomic nervous system or represent an unconscious conversion mechanism. The treatment of choice in tension headache is a combination of psychotherapy and drug therapy.

The Management of Low Back Pain in the Ambulant Patient.

R. Jessup, R. J. Murray, and A. Rossi, AM. PRACT. AND DIG. OF TREAT., 5:792-797, October 1954.

The problem of low back pain has become one of the biggest medical problems in recent years particularly in the field of industry. Because of the varying clinical picture the diagnosis should be as specific as possible. There has been a tendency in recent years for the herniated disc to overshadow all other syndromes such as the "sprained back" or the "decompensated back." Trauma is usually the precipitating factor in low back pain and care must be taken not to catalog these cases too literally as backaches. Pain is the basic factor in distinguishing between mild and severe injuries and limitations in motion are but reflections of the pain-threshold for that person.

Analgesic dosages which are safe for continued ambulatory activity did not prove adequate in removing muscle spasm. The use of Methate, a skeletal muscle relaxant which also has a central nervous system sedative effect, gave satisfactory relief in 86 per cent of 91 cases of low back pain. Success of this treatment was measured by the amount of time lost on the job. Physical measures such as diathermy and infra-red did not appreciably shorten the course of recovery unless accompanied by relief of the pain reflex.

This therapy was accompanied by instructions to the patients, as well as to all workers in the company in preventative measures against recurrent back strain. Patients also were given instructions in supportive exercises.

Cervical Spondylosis, Incidence and Implications.

Christopher Pallis, Arthur M. Jones and John D. Spillane, BRAIN, 50, Part II: 274-289, 1954.

Fifty hospital inpatients, over the age of 50, were examined clinically and their necks were radiographed.

Of these, 75 per cent showed narrowing of the spinal canal due to various combinations of posterior osteophytosis, subluxation of cervical vertebrae and loss of cervical lordosis. After 50, neither the incidence nor the severity of canal narrowing appeared to increase significantly. Some 50 per cent of the patients with narrowing of the spinal canal showed physical signs suggestive of cord involvement. After the age of 65, the incidence rose to 75 per cent.

Furthermore, 75 per cent of the patients showed narrowing of the intervertebral foramina due to osteoarthritis at the neurocentral and apophyseal joints. After 50, neither the incidence nor the severity of foraminal narrowing increased with age. Forty per cent of the patients with foraminal narrowing showed signs suggestive of root involvement. The incidence did not increase with age.

On clinical examination, abnormalities of the neck occurred in 40 per cent and neurological abnormalities in 60 per cent of the cases. Few of the patients had complaints suggestive of nervous disorder.

Cervical spondylosis is, therefore, clearly a common disease in elderly people. Its particular importance, however, lies in the fact that involvement of the spinal cord and nerve roots may occur in a silent manner. Neurological signs may precede the development of symptoms. Certain notions about the neurology of old age require review in this light. Moreover, this concept may be of importance in explaining the unexpected, and apparently irrelevant, occurrence of cord signs in certain elderly patients.

Writing the Research Report.

L. E. Heidgerten, NURSING RESEARCH, 3:74-76, October 1954.

Often times, scientific papers have been rejected by editors because of poor writing. If a reader is unable to discover the point or points the author is trying to make, no matter how good the research may have been its report has no value. Writing the research paper includes not only the actual report but also the selection of the topic, collection and tabulation of data, analysis, interpretations, and conclusions. Regardless of the form used for publication these reports should have clarity, accuracy, honesty and creativeness.

The paper itself should start with an introduction followed by a brief description of the methods used. Actual data collected should be clearly presented as well as an analysis and discussion of that data. Finally, conclusions should be drawn from the data. These sections of the paper should appear in logical order with section headings if needed for clarification. Titles should be chosen with care because they provide the first basis on which a prospective reader can decide whether or not he wants to read the report.

After first drafts of the report have been completed they should be carefully checked for weaknesses.

After the author has revised the paper he should put it aside for a time in order to gain perspective and detachment from the work. As a final step the paper should be read and checked for typographical and other chance errors. All references and documentations should be verified before publication.

Overtreatment in the Aged.

Malford W. Thewlis, J. AM. GERIATRICS SOC., 2:650-654, October 1954.

An outline of fads in therapy is presented.

In general, indiscriminate heavy dosages of drugs increase autopsy material. Overdosage with antibiotics and other drugs is often followed by severe reactions and disagreeable after-effects.

Half the standard dosage often works well with the aged. This applies not only to drugs, but to physical medicine, massage, and other methods of treatment.

The exception is in severe infections or serious emergencies, in which massive therapy is indicated.

The physician's personality in the sick room should not be overlooked as an important factor in treatment. This is applicable to other personnel treating the aged.

Many of the complications which arise consequent to the treatment of disease could be prevented by not employing such treatment in the first place.

Many of the older methods of therapy, such as venesection, artificial fever, and hot baths had the same effect on the adrenals as present-day ACTH therapy.

Gentleness is the keynote in treating the elderly.

Osteoarthritis of the Hip.

E. L. Compere, J. AM. GERIATRICS SOC., 2:673-677, October 1954.

Osteoarthritis is a condition in which the weight-bearing joints are most often and most severely involved. It is rare before the age of 30 and common among patients more than 60 years of age. The wear and tear activities of daily life as well as specific traumas and diseases which affect the joints are all factors in the development of osteoarthritis.

The nonsurgical treatment consists principally of rest, crutches to relieve weight bearing, heat and massage, and sometimes drug therapy.

Surgical procedures of various kinds have been performed with varying degrees of success. With a truly disabled hip arthrodesis has given the greatest relief of pain. Acetabuloplasty or débridement and cleaning out of the joint may be helpful in some cases but the patient still has his arthritis and the undesirable effects return. Arthroplasties have been more successful since the advent of the Smith-Peterson vitallium cup, but frequently the arthroplasty may have to be altered or revised. Denervation has been successful in patients who were not good surgical risks for arthroplasties. The obturator nerve may be severed along with a tenotomy to relieve the tight adductors. Less frequently the sciatic and femoral nerve branches to the hip are severed. The Judet method of replacing the femoral head with an acrylic prosthesis is to date the most successful procedure. It eliminates chance of surgical death and postoperative results are encouraging.

Effect of Moderate and of Weak Ultrasonic Exposures upon Normal and Denervated Mammalian Muscles.

Ernst Fischer, E. A. White, S. L. Hendricks, Jr., B. A. Chevalier, and R. B. Chevalier. AM.J.PHYS.MED., 33:284-298, October 1954.

Normal and denervated soleus muscles in rabbit were exposed to single and repeated ultrasound irradiation of 1.000 kc. at intensities of the treatment head from .025 to 4.0 watt/cm^2.

At various times after the last ultrasound exposure, both solei and the triceps brachii were analyzed for vascular space, for Cl and CNS space, for fat, for fat-free dry weight, for K,Na, and Mg. content, for total protein, for collagen, and for extractable protein. The latter was further assayed for its ATPase activity and for various physicochemical properties.

In normal and denervated muscles, single ultrasound exposure with less than 1.0 watt/cm^2 produced only temporary increase in vascular space, while with exposures of higher intensities this increase might still be detectable after 3 days and considerable extracellular edema might be produced. With the largest intensity used (4.0 watt/cm^2.) also distinct intracellular edema was evident. Denervated muscles are apparently somewhat less prone to develop edema. Repeated ultrasound exposures did not augment much the increase in vascular space and edema formation but delayed their reversibility considerably.

Repeated ultrasound exposures of denervated muscles with energies between .4 and 1. 0 watt/cm^2. retarded slightly the denervation weight loss, diminished the intracellular K–Na exchange occurring after denervation and slackened to a large extent the denervation deterioration of the specific muscle proteins.

The implications of the experimental results are discussed, and it is emphasized that they do not vindicate, since the effective dose is very critical, the therapeutic use of ultrasound in degenerative muscular diseases.

The Value of Illustration in Medical Writing.

R. L. Drake, J.A.M.A., 156:470-472, October 2, 1954.

Illustrations can greatly improve the clarity and conciseness of a medical article. It has been said that a picture is worth 10,000 words. Illustrations should be used to depict conditions or technics that cannot be described clearly or with an economy of words. The illustration need not be complex or elaborate but should be made by an artist especially trained in medical illustration. He has been taught the technics and media that are best suited to medical drawing as well as certain training in the background of the medical sciences.

There is no value in over illustration of an article, for needless drawings only take the time of the reader. Many times a simple diagram is all that is needed and attention should be called to the most important part. Lettering should be kept to a minimum and be large enough for slide projection purposes. Thought should be given to the journal in which the article is to be reproduced. Tone drawings do not produce well on poorer grades of paper.

Author and illustrator should work in consultation, the author describing what he wants and the artist submitting preliminary sketches. The written word can be used

by itself as a means of description, but the ideal combination of words and good illustration makes a paper interesting, attractive and understandable.

The Discrimination between Pinching and Pressing of the Skin, the Basis of a Clinical Test.

S. Renfrew and D. Cavanagh, BRAIN, 50, Part II:305-313, 1954.

A test is described in which the patient has to discriminate between a pinching and pressing of the skin.

The test was applied to 50 patients and 75 normal controls. When a scoring system is used a clear division can be drawn between normality and abnormality.

The test was compared to the tests of two-point discrimination and muscle-joint sense (perception of direction of passive digit movement).

The tests of two-point and pinch-press discrimination were shown to be more sensitive than the test of muscle-joint sense in the presence of a progressive lesion.

The test of two-point discrimination was thought to be more sensitive than the test of pinch-press discrimination but less reliable.

Tendon Transplantation I. Orthopedic Treatment.

Arthur W. Trott, AM. J. NURSING, 54:1210-1211, October 1954.

After a short review of the history of tendon transplantation, the author discusses the pre-transplantation conditions necessary to insure optimum results. Common tendon transplants of the foot, leg, knee, hip, and upper extremity are presented.

Post-transplantation treatment is begun four or five days after surgery at which time the cast is bivalved. This consists of muscle setting without joint movement. Within 10 to 14 days after operation, the part may be removed gently from the cast and muscle reeducation continued while the extremity is protected by the physical therapist. Range of motion is gradually increased. Six weeks following the operation full function may be allowed, since the transplant is usually solidly attached to the bone by that time.

Tendon Transplantation II. Nursing Care.

Mary L. Kerr, AM. J. NURSING, 54:1212-1214, October 1954.

The pre- and postoperaitve care of the patient receiving a tendon transplant is discussed. The proper positioning and support of the extremity in the cast are illustrated and described. General care includes turning of the patient, skin care, proper diet, recreation, and school studies by the visiting teacher when indicated.

The nurse and physical therapist should work together to remove any apprehension the patient may have, particularly early in the muscle reeducation program. During the treatment period, the patient must devote his full attention to the motion he is trying to develop. The nurse can help by seeing that the immediate environment is quiet if the treatment is given on the ward.

Planning for discharge begins early by setting up good rapport with the family during visiting hours. Instructions for home treatment or revisits to the clinic and general care are given the patient and family on discharge from the hospital.

Teaching Nurse-Patient Relationships: An Experimental Study.

Lewis Bernstein, Marie L. Brophy, Mary Jane McCarthy, and Ruby L. Roepe, NURSING RESEARCH, 3:80-84, October 1954.

Two groups of nurses—30 in an experimental group, and 29 in a control group—took a battery of three pretests. The Nurse-Patient Situation Test measured five categories of nurses' response to patients' statement: Evaluative, Hostile, Supportive, Probing, and Understanding. The F-Scale measured social attitudes on a continuum ranging from authoritarian to democratic. The Memory Test measured the ratio of physical items to psychological items remembered from a lengthy case history.

Following the administration of the pretests, the experimental group participated in a course in nurse-patient relationships. An effort was made to conduct the course along the lines suggested by Rogers' non-directive concepts.

Upon completion of the course, both the experimental and control groups again took the series of tests described above, and the differences between the pretest and post-test scores were compared. On the Nurse-Patient Situation Test, the experimental group showed a significantly greater decrease in Evaluative, Supportive, and Probing responses, with a correspondingly greater increase in Understanding responses than the control group. No significant decrease in Hostile responses was demonstrated by either group. The exceedingly small number of Hostile responses in both groups, however, minimizes the importance of this category.

The experimental group showed a significant shift toward the democratic end of the F-Scale, while the control group showed no significant change.

It is concluded that nurses' skills and attitudes in interpersonal relationships can be modified in a significant fashion when nurses understand the nature of the technics they use, the attitudes which such technics express or implement, and the feelings they generate in patients.

Experience with 250 Cerebrovascular Accident Cases in a Chronic Disease Hospital—Symptomatology, Diagnosis, Course and Treatment.

Siegfried Baumoel, Joseph I. Goodman and Bert A. Treister, OHIO STATE M.J., 50:938-942, October 1954.

Because the cerebrovascular accident is the leading cause of all major disabilities in this country the authors are presenting their experiences with the diagnosis and management of 250 cases at Cuyahoga County Nursing Home. Of the three leading causes of cerebrovascular accidents, namely, thrombosis, embolism, and hemorrhage, thrombosis is encountered in the vast majorty of cases. The history of onset of the attack proves to be the most valuable aid in differentiating these three conditions. The finding of hypertension and blood in the spinal fluid are more indicative of a cerebral hemorrhage; a cardiac disorder suggests embolism; and the presence of atherosclerosis predisposes to thrombi.

A brief discussion of the rehabilitation methods employed in these cases is given. When every effort is employed to rehabilitate these patients, even previously untreated cases, the majority are able to ambulate and many regain function of

the upper extremity as well. The authors' results prove the efficacy of active treatment in cerebrovascular accident cases and furthermore point up the necessity for treatment in the early stages.

Optic Function and Postural Attitude.

L. Halpern, NEUROLOGY, 4:831-836, November 1954.

In patients suffering from unilateral disequilibrium with the features of the sensorimotor induction syndrome, closure of the eyes as done on performance of the Romberg test is modified in that the eyes are closed alternately. The result is that the postural condition of these patients presents a different attitude. On vision with the eye corresponding to the side of disequilibrium, the same basic tendency to fall and displacement of the homolateral extremities result as when seeing with both eyes. This result is explained on the basis of the characteristic feature of the sensorimotor induction syndrome, in which the coordinates of space deviate when seen with the homolateral eye. However, on vision with the contralateral eye the tendency to fall is eliminated regularly and displacement of the homolateral extremities is reduced or entirely abolished. This effect is attributed to the extensive mutual influence of motor and sensory functions, another characteristic feature of this syndrome. The phenomenon taking place here is assumed to be due to the optic influence of light on postural attitude and therefore belongs to the sphere of sensory influence on statokinetic conditions.

Observations on Reflex Changes in the Lower Limbs in Spastic Paraplegia in Man.

John Marshall, BRAIN, 77, Part II: 290-304, 1954.

The cutaneous reflexes obtainable from the lower limbs of 44 patients with spastic paraplegia due to disease of the spinal cord, together with their receptive fields and their adequate stimuli, were studied systematically. The cutaneous reflexes included the flexor reflex, the crossed extensor reflex, the ipsilateral extensor reflex, ipsilateral flexion with extension of the foot, the crossed flexor reflex and the extensor thrust.

Division of these reflexes into two distinct groups (flexor and extensor) was not found, for all reflexes were present in many patients. The determining factor as to which reflexes are obtained is not the predominance of flexor or extensor tone, but the nature of the stimulus used to elicit the reflex, and to a lesser degree its site of application.

Book Reviews . . . . .

Doing Something For The Disabled. Pamphlet #197. *By Mary E. Switzer, Director of Office of Vocational Rehabilitation, U. S. Dept. of Health, Education and Welfare, and Howard A. Rusk, M.D., Chairman of Department of Physical Medicine and Rehabilitation, New York University College of Medicine. Illustrated by George Warfel. Paper. Price 25¢. Pp. 28. Public Affairs Committee, New York, 1953.*

The co-authors of this readable pamphlet are highly qualified to write about the disabled and what can and should be done for them.

Attractively illustrated and written in nonmedical terms, it effectively points out to the reader the overwhelming figures on disabling conditions which beset large numbers of our population. By means of a few interesting case histories, the psychological as well as the financial implications of disability are discussed. The economic burden to the taxpayer of public assistance to the totally disabled is shown in figures and graphs. Reports from various studies on rehabilitation of the handicapped are given to show how thousands of these people are returned to productive lives at a saving of millions in public funds and how in time they become contributors also as tax payers.

Pointing out that the disabled group is a fair cross section of the American people, including all age levels, various occupations, and different degrees of education and intelligence, the subject of "What Rehabilitation Can Do For Them," is well covered. For some, the goal is a job or return to school; for others independence in taking care of their daily needs at home is the realistic aim. The disabled homemaker is mentioned and her retraining for household tasks necessary for her complete rehabilitation is discussed.

The tools for making possible rehabilitation of these people are outlined as better hospital programs, more physicians, additional auxiliary personnel, and more rehabilitation centers and facilities.

The purpose of the pamphlet is contained in the last few paragraphs when the final responsibility for the handicapped is placed on the community level. It is stated that, though some responsibility rests with state and federal agencies, only if communities acquire an understanding of the needs of their own disabled citizens and what can be done for them through rehabilitation and selective placement will the solution to disability be in sight.

World Confederation for Physical Therapy, First Congress Proceedings, *London September 7-12, 1953. Patron: H..R.H. The Duchess of Gloucester, C.I., G.C.V.O., G.B.E. Cloth. Price $2.50. Pp. 91; illus. Chartered Society of Physiotherapy, London. The Campfield Press, St. Albans, Great Britain, 1953.*

The purpose of this publication is to present the scientific and formal proceedings of The First International Congress of the World Confederation for Physical Therapy which was held in London, England, September 7-12, 1953.

The arrangement of the material published follows, in general, the order in which it was presented in the program. The program is printed preceding the main section of the book which is divided into four special sections, namely: Events of General Interest, Lectures, Demonstrations and Papers by Physical Therapists. If films, slides, and demonstrations were used to illustrate any presentation the nature of such has been indicated. The discussion which followed each paper is included. No attempt has been made to record the social events of the program with the exception of the speeches at the concluding dinner.

The program included 25 Study Visits to hospitals and other health centers. Brief reports of these are included and are arranged throughout the book to fill in space gaps and thus make for economy in printing. Of particular interest are the reports of the visits to Vauxhill Motors, Ltd. and to the Rehabilita-

tion Centre, Luton and Dunstable Hospital, which demonstrated close liaison between the two institutions in the use of physical therapy in industry.

In the Opening Ceremony, the Congress symbol, an illuminated revolving globe of the world was lighted and the following lines composed by Miss G. V. M. Griffin, M.C.S.P., were recited: "Let the spirit of the congress be a willingness to serve and a sense of just enjoyment, for happiness and health are next of kin, and, from true faith in a Creator, comes willingness to help a neighbour, content of mind and peace to men." These words were repeated by Mildred Elson, President of the World Confederation for Physical Therapy in a closing speech at the concluding formal dinner.

The second section of the book comprises eight lectures with commentary on the accompanying demonstrations and the discussion which followed. The subjects included: Physical Therapy in Neuromuscular Disorders, in the Rheumatic Diseases, in Diseases of the Chest and in Industry.

The final section contains the 13 papers presented by physical therapists representing 9 different countries. These papers covered methods of treatment in a variety of diseases and injuries and research studies.

In reading this record it is evident that throughout the entire Congress the emphasis was placed upon the patient. The spirit of the Congress is expressed in the words of Dr. W. W. S. Johnston of Australia at the closing ceremony, "The background of your work and ideals as a World Confederation is the patient; that has been evident throughout the Congress. The revolving globe of the World Confederation serves to indicate that this is an international assembly and reminds us that we have a common human interest, that each and every one of us can help to unify the people of the world. With those ideals taken in conjunction with your tremendous zeal, enthusiasm and skill, there is no limit to what you will achieve in this field of work to which you have dedicated yourselves."

The Chartered Society of Physiotherapy is to be congratulated for arranging such a successful meeting and on the publication of the record of this historical event. The physical therapists of the United States will find this book of great interest as they look forward to The Second Congress of the World Confederation for Physical Therapy which meets in New York in 1956.

Die Halswirbelsaule Pathologie Und Klinik. *By Dr. Gerhard Exner, Professor of Orthopedics at University of Marburg, Lahn. Introduction by Dr. H. C. Georg Hohmann. Cloth. Price $5.50. Pp. 140; illus. Georg Thieme. Verlag, Stuttgart, 1954.*

This is a monograph concerning the diseases of the cervical spine. The author is a clinician with vast experience at the University of Marburg, Lahn. His purpose is to bring a better understanding to the symptom complex involved in the cervical spine lesions. The information comes from many sources—pathologists and anatomists contribute as do the neurologists, internists, roentgenologists, orthopedists and otolaryngologists. The author feels that it is primarily an orthopedic problem.

The author speaks of the embryology and anatomy of the cervical spine. Then he discusses the articulations of the vertebra, the muscles and the nerves. He also shows the relationship between the sympathetic nervous system and the vertebral canal. He writes about the physiology of the cervical spine—its chief purpose being to hold the upright position and to give movement to the head. There are excellent reproductions of roentgenograms showing normal and pathological vertebra and intervertebral relationships.

Under the description of pathology he particularly stresses the arthritic changes—the so-called "degenerative" arthritis including the hypertrophic changes and the alterations in the discs for which he uses the term osteochrondrosis. Under the description of symptoms as the result of degenerative changes he includes cervical migraine and occipital neuralgia. He also mentions cervical osteochrondrosis with a facial paralysis. There is a chapter on the cervical-brachial syndrome which includes the shoulder pains and the referred pains in the arm as in the scalenus syndrome. He sees a relationship between cervical osteochrondrosis and Sudeck's disease and possibly Dupuytrens.

The author believes that it is very difficult to attack the causative factors in this type of arthritis since it is a degenerative process. The treatment is directed against the disturbance in function and also to correct irreversible structural changes. He finds that direct extension of the cervical vertebral column is very effective. This can be done in the home as well as in the hospital. He uses a cast for fixation, a Schanz collar or a leather or plexiglass neck brace. Gentle manipulation is sometimes helpful. Heat and massage is beneficial. X-ray is of value where there are calcium deposits as in the tendon of the supraspinatus. The greatest benefit is obtained from the use of local anesthesia. It not only gives relief, but has a curative effect. Where a sympathetic nervous system is involved, the blocking of the stellate ganglion with novocain has given excellent results. He feels the indications for surgical interference are rare. This is in spite of the fact that good results are seen for prolapsed intervertebral discs in the lumbar area. He finds an indication for surgery only where there is paralysis caused by an irreversible nerve lesion. The results of disc surgery and enlarging the foramen have not been satisfactory. Division of the scalenus muscle for the scalenus syndrome is sometimes indicated. This is also useful in cases of cervical rib.

In conclusion the author has some short chapters on septic involvement of the cervical vertebra, chronic and rheumatoid arthritis, and injuries of the cervical spine, as well as mentioning tumors which occasionally localize in the cervical spine. Noticeable is failure of recognition of the close relationship between the sphenopalatine ganglion neuritis to the symptoms of the cervical spine

Great Systems of Yoga. *By Ernest Wood, former professor of physics; Principal and President of Sind National College and Madanapelle Collegeteaching Colleges of the Bombay and Madras Universities. Admitted to Vedantic Order at Shringeri Monastery. Cloth. Price $3.50. Pp. 168. Philosophical Library, New York, 1954.*

The author of this book on the subject of the occult was a professor of physics having received a scientific education in England at the Manchester College of Technology specializing in physics, chemistry, and geology. Thirty-eight years in India spent in living, working, teaching and reading in the original Sanskrit, the literature of two thousand years, led this author to describe ten systems of yoga, in the belief that the cultivation of the spirit as practiced by the yogis might "be blended in with the practical material civilization which has been so wonderfully developed in the modern world." The author is

steeped in the spirit of Indian wisdom, and his "concise survey of the entire field" is like a fresh breeze from an unfamiliar direction. *Great Systems of Yoga* leaves the reader with the impression of the potentialities of the human spirit.

"Yoga is the practice of occult powers—or rather the discovery and use of those powers residing unseen in the depths of the human mind. The practice could begin with the formula, 'We are only part alive,' and from that standpoint proceed to investigate the Introspectional Psychology of the ancients, which they said united them—yoga means union—with the latent possibilities and unseen actualities of and beyond the mind." All schools of yoga have as their common goal union with the Eternal. The postures and purifications commonly associated with yoga—one posture appearing on the paper cover of the book—are a small part of only certain schools. These are external aids toward affecting the desired union with the Eternal, while a large part is played by concentration, meditation and contemplation. *Concentration* is "voluntary attentiveness," *meditation* is an "expansion of attention without loss of intensification," and *contemplation* is "active poise." The purpose of such powers is to "master the environment and find the ethical and spiritual forces and experiences which are not only immature but positively infantile in most people."

Thought, love, and will are the three inner resources of the mind for which yogis strive in order to rise above circumstances. The three powers must be used positively, to attain harmony between the outer and inner life and merge with the Eternal. "There can be no hate and such emotions, no carelessness of judgment, no surrender of the will, all of which imply negativity. . . . That peace and power are two aspects of one principle is one of the chief discoveries of the Oriental occultist—a discovery within the reach of all reasonable persons." The three powers of thought, love, and will can be put to daily and constant practical use. Isolated incidents of "magic" lose their perspective outside their setting of yoga practice. "All over the country (of India) are tens of thousands of people who give part of their day to the pursuit of the methods of the ancient occult teachers, although they are engaged in modern occupations. There is . . . in India a vein of practicality in these matters which most Western persons just do not understand."

Thus is yoga the practical use of the mystical through the cultivation of the spirit which the author believes can "be blended in with the practical material civilization . . . in the modern world." The writer of this review is reminded of Lincoln Barnett's quotation of Einstein, whose philosophy of science has sometimes been criticized as materialistic, as follows:

> "'The most beautiful and most profound emotion we can experience is the sensation of the mystical. It is the sower of all true science. He to whom this emotion is a stranger, who can no longer wonder and stand rapt in awe, is as good as dead. To know that what is impenetrable to us really exists, manifesting itself as the highest wisdom and the most radiant beauty which our dull faculties can comprehend only in their most primitive forms—this knowledge, this feeling is at the center of true religiousness.' . . . On another occasion he (Einstein) declared, 'The cosmic religious experience is the strongest and noblest mainspring of scientific research.'" (Page 117 of "The Universe and Dr. Einstein," published by The New American Library of World Literature, New York, 1950.)

The language of *Great Systems of Yoga* differs from the language of Western reading fare, as inexactness differs from exactness. Some readers may miss the clarity reaching our scientifically slanted writing through the influence of such books as, "Language in Thought and Action," by S. I. Hayakawa, Harcourt, Brace and Company, New York, 1949, "Science and the Goals of Man," by Anatol Rapoport, Harper and Brothers, New York, 1950, and the works of Stuart Chase on the meaning and relationship of branches of scientific inquiry and knowledge.

The preface and the first chapter of *Great Systems of Yoga* are the most easily understood parts of the book, whereas the distinctions between the ten principal ancient schools of yoga remain uncrystallized in the mind of a reader accustomed to the more precise presentation of scientific information. Seven of the ten oriental yogas are well known and practiced widely. Only the last four of the seven emphasize the importance of external material aids of body and environment, such as the exercises, dietary measures, and purifications to maintain a healthy and disciplined body. The first of these latter four schools, that of Hatha Yoga, is especially devoted to breathing practices. Chapter Five, "The Hatha and Laya Yogas," opens with, "Although the writer . . . holds to the opinion that these physical practices cannot develop the mind at all, or contribute to its yogic or occult experience, he agrees that when the hatha-yoga exercises are properly done they are beneficial to the body." There follow 19 pages without illustrations which, interesting as they are, suffer, as do all exercise descriptions, from the difficulty of depicting movement in words. These pages include brief references to diet, rest, breathing, postures, self-purifications and sounds produced by sustained closure of the eyes, ears, nose, and mouth.

The book is rich in Indian words and references and their beautiful translations, such as the Bhagavad Gita, the sacred book of the Hindus which Gandhi used and loved so well and which means "Celestial Song." In his book entitled, "Gandhi: His Life and Message to the World," published by The New American Library of World Literature, New York, 1954, Louis Fischer says Gandhi was a yogi of an action school (rather than of the meditation schools), giving in Gandhi's own words, his definition of the perfect yogi of action:

> "'He is a devotee who is jealous of none, who is a fount of mercy, who is without egotism, who is selfless, who treats alike cold and heat, happiness and misery, who is ever forgiving, who is always contented, whose resolutions are firm, who has dedicated mind and soul to God, who causes no dread, who is not afraid of others, who is free from exultation, sorrow and fear, who is pure, who is versed in action yet remains unaffected by it, who renounces all fruit, good or bad, who treats friend, and foe alike, who is untouched by respect or disrespect, who is not puffed up by praise, who does not go under when people speak ill of him, who loves silence and solitude, who has a disciplined reason. Such devotion is inconsistent with the existence at the same time of strong attachments.'" (Page 18)

From this reviewer's kinesiology file comes a February 24, 1941, LIFE MAGAZINE article, entitled, "This Is Real Yoga." The 23 photographs by Wallace Kirkland are examples of balanced postures attained through daily practice, the mastery of which better enables the yogis of certain schools to become united with the soul of the universe. They are best performed by persons under 30, the article indicates. The physical aspects of these feats are comparable in neuromuscular coordination and endurance to the

achievements of our Olympic Game champions. The Hindus seek their precision for serenity of self through suppression of physical movement. Our athletes aim to surpass competitors through speed and form. From this visual supplement to the book being reviewed, physical therapists interested in body mechanics, posture, movement and exercise, including breathing and relaxation, may gain evidence of the extent to which practice can induce precise muscular development and balance control.

The experience of reading *Great Systems of Yoga* comes as an inspiration to a physical therapist spending hours a day at the bedsides of older patients wracked with pain and often ridden with many diseases. The hard-earned movements of these patients, however small and however far removed from the physical, mental, and spiritual perfections of the yogis, may also be triumphs of the human spirit. Using a trapeze attached to the bed to lift one's restricted body for placement of a bedpan, turning one's stiffened frame by ropes attached to the sides of the bed to allow the application of ultraviolet to an obstinate bedsore, and wriggling oneself by overhead bars, straps and pulleys to permit efficient transfer from bed to wheelchair, are three results of persistence and belief common to Indian yoga and to our positive rehabilitation methods aimed at reclaiming human abilities and independence.

Music Therapy. *Edited by Edward Podolsky, M. D., Department of Psychiatry, Kings County Hospital, Brooklyn, N. Y. Cloth. Price $6.00. Pp. 333. Philosophical Library, New York, 1954.*

A well edited and comprehensive collection of writings on the many facets of music therapy comprise the main portion of the book. These are preceded by an excellent general discussion of the historical background of music as it has been used to induce, alleviate, or enhance certain emotional states. Occupational therapists in mental hospitals will perhaps be more interested in the book than will physical therapists, but the latter nevertheless will find much of value, especially in the sections on "The Use and Therapeutic Value of Music in the Hospital and Operating Room," and "Music in Medicine."

Dr. Podolsky's section on "Music and Mental Health" and Dr. Altshuler's discussion of "The Past, Present and Future of Musical Therapy" lay a general foundation for the more specific discussions which follow. Granted that the utilization of music as therapy is empirical, belief in its benefits is so widely held that its use must eventually be evaluated and interpreted by research technics.

Of general interest to all, the book has its greatest appeal to the physical therapist if she is working with the brain-injured patient.

Building America's Health. *Report of the President's Commission on the Health Needs of the Nation. Paper. Price $1.50. Pp. 143. Health Publications Institute, Inc., North Carolina, 1953.*

This is a 150-page condensation of a five-volume official report of the President's Commission on the Health Needs of the Nation. President Truman established this commission, consisting of a chairman and fourteen members, to investigate the nation's health, what it has at present to protect its health, what it will need for the future, and how these needs can be provided for.

This Commission made recommendations for nine classifications the health services as follows: The American People and The Health, 2) Health Personnel, 3) Health Facilities, 4) Organization of Health Services, 5) Medical Research, 6) Financing Personal Health Services, 7) A Department of Health and Security, 8) Special Aspects of Health Service, 9) Federal Health Commission.

The following are just a few of the recommendations listed in this book. It was recommended that the Federal government develop methods to measure morbidity in the general population and apply these methods for obtaining the current health status of the people. In the matter of health personnel, it was recommended that government funds be made available to overcome financial problems of schools training health personnel; that government funds should provide scholarships for students who could not afford such education; and that there should be more Negroes trained in health professions. The commission recommended that the people as a nation plan and develop a system of hospital and health facilities to serve all urban and rural people. These could be given Federal grants for construction but would be under local operation. It was recommended that segregation in the use of the hospital should be eliminated to improve efficiency. It was recommended also that a Federal State program be established to assist in financing personal health services. A single State health authority would be established which could draw on an over-all State Plan to assist in developing personal health services for those persons who use public or private agencies and resources. It was recommended that Congress establish a Department of Health and Security and also establish a permanent Federal Health Commission to continue the study of the nation's health needs.

The statistical reports from which the Commission formed its recommendations were so numerous that only a few are presented in this book. Many of the statistical findings are reflected in the recommendations made by the Commission.

This condensation was published to present the highlights of the Report in a brief and less expensive form than the official five-volume version.

The reviews here published have been prepared by competent authorities and do not represent the opinions of the American Physical Therapy Association.

Postgraduate Cerebral Palsy Course

An announcement of a Postgraduate Cerebral Palsy Course to be held at Columbia University, College of Physicians and Surgeons, 630 West 168th Street, New York 32, New York, has been received.

The course will last nine weeks and the dates are February 7–April 8, 1955. Content includes formal lectures, clinical experience and seminars for discussions. The fee is $210.00 and 8 points of graduate credit will be awarded for successful completion of the course. Some scholarships are available—a list of sources will be sent upon request.

Our Book Reviewers for February

G. Louise Barnhart, graduate of the University of Wisconsin, is an inactive member of the American Physical Therapy Association and a resident of Greensburg, Pennsylvania.

Gertrude Beard, Chief of Physical Therapy Department, Bethany Hospital, Kansas City, Kansas.

Mary Eleanor Brown, Physical Therapist, St. Vincent's Hospital, New York City.

Emil D. W. Hauser, M.D., Associate Professor of Bone and Joint Surgery, Northwestern University, Chicago, Illinois.

Miriam Rodenberger, Captain, WMSC, 3201st USAF Hospital, Eglin AFB, Valparaiso, Florida.

Hope Pate Schuch, Physical Therapist, North Carolina Memorial Hospital, Chapel Hill, North Carolina.

Classified WANT-ADS

WANTED: PHYSICAL THERAPIST for Berkshire School for Crippled Children, Pittsfield, Mass. Five-day, 40-hour week, all holidays, month of August off, three weeks at Christmas. For information and further details, write Catharine S. Dover, Supt.

PERMANENT STAFF POSITION FOR PHYSICAL THERAPIST. Graduate of accredited school; good starting salary with regular increases; to work with children up to 21 years of age. Forty-hour week, vacation with pay, sick leave, etc.; 100-bed orthopedic hospital, new modern equipment. Write to Miss Anna Quinn, R.N., Administrator. Kosair Crippled Children Hospital, 982 Eastern Parkway, Louisville 4, Ky.

PHYSICAL THERAPIST I
Qualified physical therapist for position in large county hospital. Forty-hour week liberal retirement, paid sick leave and vacations. Liberal salary with automatic annual increases. Must be citizen of U.S. For information and application write: Wayne County Civil Service Commission, 2200 Cadillac Tower, Detroit 26, Mich.

WANTED: PHYSICAL THERAPIST for polio center. Attractive salary. Contact Personnel Director, Plainview Hospital, Clinic and Foundation, Plainview, Texas.

Position for OCCUPATIONAL THERAPISTS and SENIOR OCCUPATIONAL THERAPISTS with the State of Connecticut. Present openings at Undercliff Hospital, Meriden; Woodruff Center, New Haven, Connecticut; and Veterans' Hospital, Rocky Hill, Connecticut. Challenging shop programs, both male and female, therapy on rehabilitation wards and clinical training programs. Salary dependent on qualifications. Living accommodations. Liberal vacation, sick leave and retirement benefits. Excellent working conditions. Positions under civil service. Write or telephone the State Personnel Director, Room 405, State Office Building, Hartford, Connecticut, or the Medical Director, Commission on the Care and Treatment of Chronically Ill, Veterans' Hospital, Rocky Hill, Connecticut.

IOWA METHODIST HOSPITAL, DES MOINES, IOWA, needs qualified physical therapist. Hospital has 400 beds, including 100-bed Raymond Blank Memorial for Children. Postpolio cases, in- and outpatient work. Competent professional staff and assistants, excellent working relationships. Apply: Bruce D. Root, Personnel Director.

PHYSICAL THERAPISTS NEEDED in TEXAS. Excellent starting salary. Write UCPA of Texas, 912 Fidelity Bldg., Dallas, Texas.

IMMEDIATE OPENING for physical therapist to work primarily with children. Variety of conditions treated. Some adult rehabilitation. Room for expansion in scope of program depending on staff. Five-day week, paid vacation and sick leave, Social Security. Salary open. Apply: Junior Service League Orthopedic Center, 1219 Dunn Ave., Daytona Beach, Florida.

Immediate placement for QUALIFIED FEMALE PHYSICAL THERAPIST for work in children's outpatient clinic. Liberal personnel policies including month's paid vacation and a pension plan. Salary dependent on experience. Apply to Ruth M. Anderson, Supervisor Physical Therapy, Detroit Orthopaedic Clinic, 5447 Woodward Avenue, Detroit 2, Michigan.

CEREBRAL PALSY CLINIC—Staff physical therapist for cerebral palsy outpatient department in a children's hospital. Cerebral palsy training preferred. Attractive salary, forty-hour week, sick leave, four-week vacation. Apply to Harold Palmer, M.D., Medical Director, The Children's Hospital, Nineteenth Avenue at Downing Street, Denver 18, Colorado.

PHYSICAL THERAPIST NEEDED for outpatient clinic in well equipped rehabilitation center. Excellent working conditions. Write H. L. Keats, Executive Director, Portland Rehabilitation Center, 1615 S. W. 14 Avenue, Portland 1, Oregon.

WANTED: PHYSICAL THERAPIST qualified to take charge of new department completely equipped with full hydrotherapy, electrotherapy and exercise rehabilitation equipment in 321-bed hospital located in near west side of Chicago. A golden opportunity for an ambitious, dynamic therapist to build an exceptional department. Excellent working conditions and salary commensurate with experience and ability. Write to: Sr. DeChantal, Admin. Saint Mary of Nazareth Hospital, 1120 N. Leavitt, St., Chicago, Illinois.

WANTED IMMEDIATELY: TWO qualified field staff physical therapists for homebound service in a generalized voluntary public health nursing agency to work under qualified physical therapy supervision. Salary dependent upon experience; 40-hr., 5-day wk.; 7 holidays; 22 working days vacation; 12 working days sick leave. Apply Assistant Director, Visiting Nurse Society of Philadelphia, 1340 Lombard Street, Philadelphia, 47, Pennylsvania.

PHYSICAL THERAPIST for 400-bed general hospital. New, fully equipped department for treatment of all types of patients, including outpatients. Liberal personnel policies. Write to: William D. Barclay, Madison General Hospital, Madison, Wisconsin.

12

Classified WANT-ADS

QUALIFIED PHYSICAL THERAPIST needed for staff position in children's orthopedic hospital. State registration required. Good salary, maintenance optional; 15 days' vacation; 15 days' sick leave, 40-hour week. Contact Dr. W. L. Minear, Chief Surgeon, Carrie Tingley Hospital for Crippled Children, Truth or Consequences, New Mexico.

POSITION: Physical therapist for new cerebral palsy center. If person has had sufficient experience, directorship will be open also. Apply to Mrs. Thomas Owen, Amarillo Cerebral Palsy Center, Amarillo, Texas.

IMMEDIATE OPENING FOR PHYSICAL THEAPIST: 430-bed general hospital in northern Ohio. Address replies to Box 25, care of the Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

PHYSICAL THERAPISTS: Positions now open in California state hospitals, prisons, special and public schools. All positions require graduation from recognized school of physical therapy. Physical Therapist I requires no experience. One year of experience required for Physical Therapist II, and Physical Therapist for Physically Handicapped Children. Successful completion of examination gives permanent status. Write immediately to California State Personnel Board, 1015 L Street, Sacramento 14, Calif.

Classified WANT-ADS

RATES

The rate per insertion is 75c per line. Typewrite your advertisement carefully and count 50 characters and spaces per line.

ALL WANT-ADS MUST BE PAID FOR IN ADVANCE. Make checks or money orders payable to the American Physical Therapy Association.

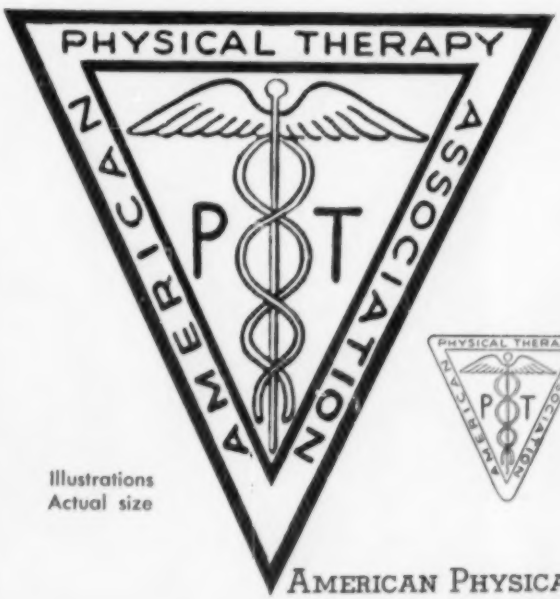
Closing date for copy and cancellations is two months preceding publication date.

Institutions or physical therapists who do not wish their identity known may arrange for Blind Ad Code No. All such want-ads must include the following which will be counted as 2 lines:

Address replies to ... ... care of The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

IMPORTANT

It is understood and agreed that the publisher shall have the right to reject or change the wording of any advertisement which in the opinion of the Editorial Board shall not be in agreement with the ethical standing of this publication.



Illustrations
Actual size

Your Emblem

PRICE: ONLY 25 CENTS

Embroidered in blue and gold (the Association's colors) on white cloth.

Your Pin

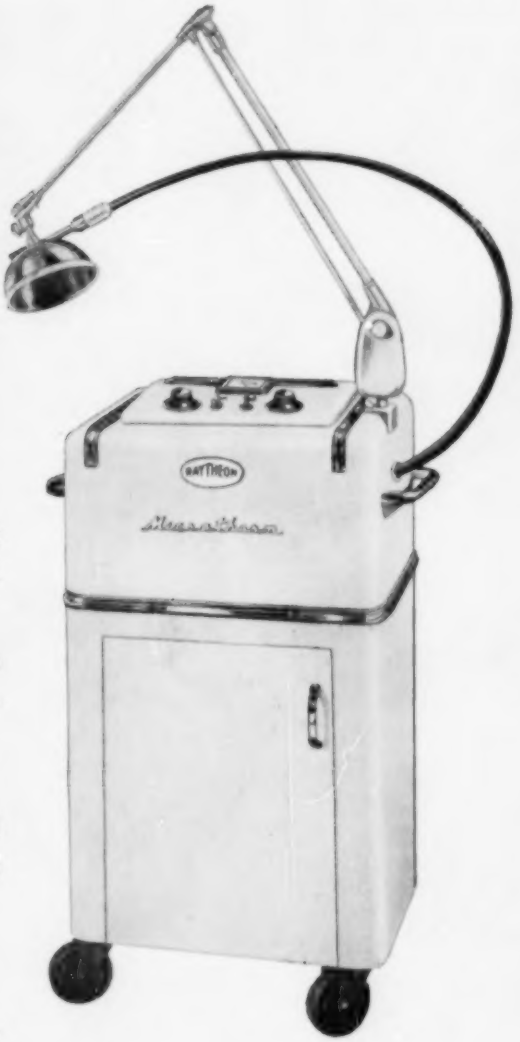
PRICE: $4.50

Made of 1/10 of 10 karat gold-fill with blue enamel outline; safety clasp.

AMERICAN PHYSICAL THERAPY ASSOCIATION
1790 Broadway, New York 19, N. Y.

the most widely used Diathermy—now better than ever

INTRODUCING NEW 1955 RAYTHEON MICROTHERM®



new...Functional design in a trim, sleek cabinet with streamlined operating panel.

new...Safety monitors that prolong life of parts: automatic shut-offs protect equipment, prevent errors.

new...Warranty of two full years on all parts—a guarantee of reliable quality and craftsmanship throughout.

and...
just in time to serve the broadening range of new Raytheon Microtherm applications now being reported in professional papers.

Ask your medical equipment dealer to demonstrate the new Raytheon Microtherm, Model CMD-10.

Excellence in Electronics

RAYTHEON

RAYTHEON MANUFACTURING COMPANY
Microwave and Power Tube Operations, Waltham 54, Massachusetts